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Job Sample Tests as Predictors of M1 Gunnery Performance: Appendixes A-E

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M60A1 tank	Driver	

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

The objectives of Phase I of this research ~~were~~ was to (1) develop an aptitude measurement methodology which could be used to design job sample tests for armor crewmen; (2) apply the methodology to develop job sample tests; and (3) administer the job sample tests to armor crewmen and analyze the test data. Phase II, reported separately, included analyses of the predicted validity of the job sample tests.

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Item 20 (Continued)

A five-stage methodology for job sample test design was developed. Stages included task identification; task prioritization; job sample dimensional analyses; trade-off analyses; and detailed job sample test development. Seven job sample tests, three computer-based and four hands-on tests, were developed using the methodology. They were Operate Computer Panel, Computer Tracking, Computer Target Engagement, Tank Commander Decision Making, Hands-On Gun Laying, Hands-On Tracking, and Hands-On Target Engagement. Tests were administered to armor crewmen stationed in Europe. The analysis of test data indicated a low degree of intercorrelation among job sample tests which suggested that they were measuring different gunnery behaviors.

Crew experience, in general, was not related to job sample test performance. There was generally good evidence for construct validity of the tests. Although no post predictor criteria were available for Phase I of the research, the results of regression analyses indicate that linear combinations of the job sample test measures account for a very high proportion of the variability in a crew's past success at Annual Qualifications.

The text to these appendixes was published separately as Technical Report 584.

JOB SAMPLE TESTS AS PREDICTORS OF M1 GUNNERY PERFORMANCE:
APPENDIXES A-E

CONTENTS

APPENDIX A

JOB SAMPLE TEST DESCRIPTIONS

COMPUTER PANEL

SUBJECTS

M60A1 Tank Commanders, Gunners, Loaders, and Drivers

JUSTIFICATION

The M1 fire control computer integrates data from a number of sources and sensors to calculate the fire control solution for each round fired under precision gunnery conditions. The proper setup and operation of the computer control panel is necessary to ensure the best possible fire control solution.

CONDITIONS

Subjects were seated in front of a 12-inch color video monitor so that they could reach the screen of the video monitor with a light pen.

TASK DESCRIPTION

The subjects performed computer control panel operations using a computer-generated image of the M1 computer control panel displayed on the video monitor. Operations on and responses to the simulated (computer graphic) computer control panel were accomplished through a light pen. Individual trial instructions were presented via text which appeared below the graphics area on the video monitor. The subjects conducted data checks and manually entered data into the computer. Subjects also conducted computer self-test routines and responded to automatic input failures and other system failures.

INDEPENDENT VARIABLES

The subjects completed five practice trials which included a check data task, an enter data task, and three computer self-test tasks. Following

the practice tasks, subjects completed a series of 10 trials which included both check data tasks and enter data tasks. Following these tasks, subjects completed an additional 10 trials consisting of computer self-test tasks.

PROCEDURES

Subjects were seated at the video monitor on which was displayed a graphic representation of the M1 computer control panel. The experimenter presented a demonstration briefing to each subject. The briefing covered, in order, the following topics:

1. Description of the M1 Computer Control Panel
   a. On-Off Switch
   b. Automatic Input Buttons
   c. Manual Input Buttons
   d. Display Area
   e. Number Pad
   f. Clear and Enter Buttons
2. Description of the M1 Computer Inputs
3. Demonstration of Light Pen Usage
4. Instructions for and Demonstration of a Check Data Task
5. Instructions for and Demonstration of an Enter Data Task
6. Instructions for and Demonstration of Three Computer Self-Test Tasks
7. Subject Practiced a Check Data, an Enter Data, and Three Computer Self-Test Tasks (experimenter available to answer questions only)

Upon completion of the five practice trials, the subject completed 10 trials of check data and enter data tasks and 10 trials of computer self-test tasks without assistance from the experimenter.

A check data task included the following steps:

1. Subject read the instructions presented on the lower portion of the video monitor. Typical instruction format was "CHECK AMMO TEMP. CORRECT AMMO TEMP IS 87.5."

2. Subject used the light pen to "press" the AMMO TEMP button. The AMMO TEMP button changed color to indicate that it had been selected. AMMO TEMP value currently stored in the computer was displayed in the display area.

3. Subject compared AMMO TEMP value in display area with the correct AMMO TEMP value given in instructions.

4. For a check data task, the value in the display was always the same as the correct value. The subject's response in this case was to "press," with the light pen, the ENTER button to return the displayed value to the AMMO TEMP memory location.

5. When the ENTER button was pressed, the value in the display was erased and the AMMO TEMP button changed color to white to indicate an "off" status.

6. The subject's performance data were recorded and stored on disk and the next instruction appeared on the monitor.

An enter data task included the following steps:

1. Subject read the instructions presented on the lower portion of the video monitor. A typical instruction format was "CHECK AIR TEMP. CORRECT AIR TEMP IS 92.5."

2. Subject used the light pen to "press" the AIR TEMP button. The AIR TEMP button changed color to indicate that it had been selected. The AIR TEMP currently stored in the computer was displayed in the display area.

3. Subject compared AIR TEMP value in the display area with the correct AIR TEMP value given in the instructions.

4. For an enter data task, the value in the display was always different than the correct value. The subject's response for an enter data task was to use the number pad to enter the correct AIR TEMP value into the display. The light pen was used to select the numbers. Selected numbers overwrote the numbers which initially appeared in the display. The subject used the CLEAR button to erase numbers entered incorrectly. The CLEAR button also caused the original value to reappear in the display.

5. When the subject had selected the correct value for AIR TEMP (now appearing in the display area), the next action was to use the light pen to "press" the ENTER button. The display was erased and the AIR TEMP button changed color to white to indicate an "off" status.

6. Subjects then performed a check data task according to the procedures described above to ensure that the new value had been properly entered into the computer.

7. At the completion of the check data task, instructions appeared for the next trial.

A computer self-test task included the following steps:

1. Subject read the instruction presented on the lower portion of the video monitor. The instruction was "RUN COMPUTER SELF-TEST."

2. Subject used the light pen to "press" the TEST button.

3. Subject monitored the computer control panel as the self-test routine was executed.

4. If there were no system failures, the word PASS appeared in the display area and the self-test was complete.

5. If an automatic input failed, the failed input button flashed. Subjects had to "press" the failed input button and then the ENTER button to continue the self-test routine. If there were no additional automatic input failures and no failures in other systems, the word FAIL appeared in the display and the self-test was complete. Incorrect procedures terminated the trial.

6. If a failure occurred in one of four other systems, a number 1, 5, 6, or 7 appeared in the display to indicate the failed system. If more than one system failed, the failure numbers appeared one at a time in the display. The subject's response was to monitor the sequence of failure numbers which appeared in the display. After all failure numbers had appeared, FAIL appeared in the display and the NO GO light came on. The subject then used the number pad to enter the failure numbers into the computer in the same sequence in which they appeared on that trial. The trial was complete when the failure numbers had been entered correctly Errors in entering the failure numbers terminated the trial.

7. A computer self-test could include any combination of automatic input failures and other system failures.

Subjects had to respond to task instructions within 15 seconds or the trial was terminated and scored as an incorrect response.

DEPENDENT VARIABLES

The following dependent variables were measured:

ECD:CORR	The number of enter/check data trials performed correctly.
ECD:TIME	The amount of time to perform an enter/check trial.

CST:CORR	The number of computer self-test trials performed correctly.
CST:TIME	The amount of time to perform a computer self-test trial.
AVG:CORR	Average number of correct trials (ECD and CST).
AVG:TIME	Average time to complete trials (ECD and CST).

SCORING

The number of correct/incorrect responses to each computer operation task was scored. Time to complete a computer operation task was recorded. Scoring was automatically accomplished as part of the computerized test routine.

EQUIPMENT

1. Apple II Plus microcomputer used to generate graphic representation of M1 computer control panel, operate control panel, control light pen, and record performance data.

2. NEC 12-inch color video monitor used to display graphic simulation of M1 computer control panel.

3. A 3-G light pen used to operate simulated computer control panel. Light pen substituted for operable control panel buttons.

APPROXIMATE ADMINISTRATION TIME

Demonstration Briefing and Practice Session	15 minutes
20 Trials	20 minutes
Total	35 minutes

COMPUTER TARGET ENGAGEMENT (CTE)

SUBJECTS

M60A1 Tank Commanders, Gunners, Loaders, and Drivers

JUSTIFICATION

The M1 tank has a laser rangefinder (LRF) which can provide very accurate range information to the M1 fire control computer. Under certain atmospheric conditions and/or if the target is partially obscured by terrain or other objects, the LRF range data may not be accurate; and the target, therefore, may be missed. The gunner and tank commander must correctly interpret and act upon the LRF range data to assure highest probability of target hit.

CONDITION

Subjects were seated at a table in front of the image combiner apparatus. They viewed 35mm slides of actual target scenes with a controllable computer-generated reticle superimposed on the target scene. Range data were also presented in the target scene. A modified joystick controller was placed on the table surface and was operated by the subjects to move the reticle, change magnification of the target scene, operate a simulated laser range finder, and fire on the target. The modified joystick also controlled presentation of the target scenes.

TASK DESCRIPTION

Subjects performed target engagement procedures applicable to the M1 tank. They first viewed a 3X magnification of the target scene to acquire the target and center the reticle on the target. They then selected a 10X magnification of the target scene, centered the reticle on the 10X target image, and pressed the laser rangefinder button to obtain target range data. If range data appeared without a multiple return bar, subjects immediately

pressed the fire button which then completed the trial. If range data appeared with a multiple return bar, subjects pressed the laser button again and then immediately pressed the fire button to complete the trial.

INDEPENDENT VARIABLES

Subjects completed two instructional trials and 18 scored trials. One instructional and nine scored trials presented initial range data without a multiple return bar, and one instructional and nine scored trials presented initial range data with a multiple return bar.

PROCEDURES

Subjects were seated at the table-top device while the test administrator entered the subject's name, rank, and Social Security number into the computer. Subjects were then given instructions on the M1 gunner's primary sight, the use of the 3X and 10X magnification settings, and the operation of the laser rangefinder. Subjects were briefed on the significance of the multiple return bar and the procedures to follow if a multiple return bar did appear when using the laser rangefinder.

After the subjects were briefed on the M1 equipment, the experimenter explained how the table-top device would be used to simulate some of the M1 equipment and exercise some of the target engagement procedures unique to the M1. The subject was presented with an actual target scene representing the 3X magnification setting of the gunner's primary sight. A reticle was superimposed on the target scene and a four-digit range number appeared below the scene. Subjects were then briefed on the functions of the joystick box. Subjects practiced using the joystick itself to move the reticle over the target scene. Subjects were then told to center the reticle on the target vehicle appearing in the 3X magnification scene. When the reticle was centered on the target, the experimenter explained that the "10X" button on the joystick box should be used to obtain a 10X magnification of the target. The subject pressed the 10X button and the target scene changed to a 10X scene of the same target. Subjects were instructed to center the

reticle on the target in the 10X scene and press the "Laser" button on the joystick box to simulate use of the laser rangefinder. For the first demonstration trial, the range numbers below the scene changed to indicate range to the target. A multiple return bar did not appear over the range numbers. Subjects were then told to keep the reticle centered on the target and immediately press the "Fire" button on the joystick box to simulate firing on the target. Pressing the "Fire" button completed the trial and activated the presentation of the 3X target scene for the following trial. The subject then completed the second demonstration trial while the experimenter observed and corrected errors as necessary. When the subject pressed the "Laser" button in the second trial, the range numbers changed as in the first trial but a multiple return bar also appeared over the range numbers. At this point the experimenter explained that the multiple return bar indicated a problem with the range data and that the proper response was to make sure the reticle was centered on the target and press the "Laser" button again in an attempt to get more accurate range data. Whether the multiple return bar disappeared or remained after the second "Laser" press, the subject was instructed to press the "Fire" button to complete the engagement.

After the instructions and the two demonstration trials, each subject completed 18 trials on his own (nine trials with no multiple return bar after first laser press and nine trials with a multiple return bar after first laser press). Each subject received the same sequence of trials. The appearance of a multiple return bar trial could not be anticipated and subjects were not told the number of multiple return bar trials which would appear. Subjects were instructed to place the reticle on target as accurately as possible, to complete engagement procedures as quickly as possible, and to observe correct laser range finder procedures.

DEPENDENT VARIABLES

The following dependent variables were measured:

PROC:ERROR	Errors in responding to the presence or absence of a multiple return bar over the range data obtained from the initial "Laser" button press.
3X:ERROR	Number of computer graphic "pixels" between the center of mass of the 3X target image and the center of the reticle immediately prior to selecting the 10X target scene. Average and median distances were calculated.
L1:ERROR	Number of computer graphic "pixels" between the center of mass of the 10X target image and the center of the reticle when the first "Laser" was pressed. Average and median distances were calculated.
L2:ERROR	Number of computer graphic "pixels" between the center of mass of the 10X target image and the center of the reticle when and if the second "Laser" was pressed, averaged, and median distances were calculated.
F:ERROR	Number of computer graphic "pixels" between the center of mass of the 10X target image and the center of the reticle when the "Fire" button was pressed. Average and median distances were calculated.
3X:TIME	Time from appearance of the 3X target scene to press of the "10X" button.

L1:TIME	Time from press of "10X" button to initial press of "Laser" button.
L2:TIME	Time from initial press of "Laser" button to second press of "Laser" button.
F:TIME	(a) Time from initial press of "Laser" button to press of "Fire" button when a multiple return bar was not present. (b) Time from second press of "Laser" button to press of "Fire" button when a multiple return bar was present.
10X:TIME	Time from press of "10X" button to press of "Fire" button.
TOT:TIME	Time from initial appearance of 3X target scene to press of "Fire" button. Average and median values were calculated.

SCORING

Correct response procedures for the presence or absence of the multiple return bar were recorded by the Apple II Plus microcomputer.

Standard locations of target images, expressed in X-Y coordinates of computer graphic "pixels," were used as benchmarks to determine the straight line (hypotenuse) distance between standard target locations and location of center of reticle controlled by subjects.

Time data was obtained from timing capabilities of the Apple II Plus microcomputer.

EQUIPMENT

1. Apple II Plus microcomputer generated the reticle, range data, multiple return bar, provided time data, and controlled the presentation of target scenes.

2. MIMCO joystick control used by subject to move reticle over target scene, to select 10X target scene, to activate simulated laser rangefinder, and to fire on the target.

3. Kodak carousel 35mm slide projector used to project the 3X and 10X target scenes.

4. NEC 12-inch color video monitor used to present the computer graphic image of the reticle, the laser range finder range data, and multiple return bar.

APPROXIMATE ADMINISTRATION TIME

Present Two Instructional Trials	7 minutes
Subject Completion of 18 Scored Trials	20 minutes
Total	27 minutes

COMPUTER TRACKING (CT)

SUBJECTS

M60A1 Tank Commanders, Gunners, Loaders, and Drivers

JUSTIFICATION

Tracking is an important part of target engagement. Tracking assumes more importance in the M1 in that computation of automatic lead requires that the gunner track moving targets for minimally two seconds to ensure the proper firing solution.

CONDITION

Subjects were seated in front of the image combiner apparatus described in Computer Target Engagement. Subjects viewed the monitor which presented a reticle fixed in the center of the display and a moving target cursor.

TASK DESCRIPTION

Subjects used the joystick control to keep a moving target cursor superimposed on the center of the fixed reticle. A computer-generated aural signal indicated a "hit" when the target cursor was in the center of the reticle. Subjects "tracked" the cursor during three two-minute periods, with each period presenting a faster cursor speed. Periods were designated easy, moderate, and hard based or increasing speed of the cursor and were presented in that order to all subjects.

INDEPENDENT VARIABLES

Subjects completed three tracking periods with cursor speed (easy, moderate, and hard) increasing between each period.

PROCEDURES

Subjects performed the computer tracking task immediately upon completion of the Computer Target Engagement task. The subjects were told that the reticle would remain stationary in the center of the monitor and that the target would be a moving dot or cursor. Their task was to use the joystick to keep the cursor centered on the reticle. Subjects were told that each period lasted two minutes and that the cursor would move at a higher rate of speed during each successive period. Prior to the start of the first session, the test administrator suggested that the joystick be held to the far right position until the cursor was brought into the reticle area. When the cursor was in the reticle area the subject was told to complete the remainder of the period independently. Upon completion of a session, performance data was displayed on the monitor. Instructions for the next session were presented on the monitor and directed the subject to press a joystick button when ready to start.

A message indicating the task was complete followed the third tracking period.

DEPENDENT VARIABLES

The following dependent variables were measured.

EASY:TOT	Time on target. Amount of time the reticle was centered on the moving cursor during an "easy" tracking period.
MOD:TOT	Time on target. Amount of time the reticle was centered on the moving cursor during "moderate" tracking period.
HARD:TOT	Time on target. Amount of time the reticle was centered on the moving cursor during a "hard" tracking period.

EASY:ERROR	Average distance error (root mean square) between the center of the reticle and the moving cursor during an "easy" tracking period.
MOD:ERROR	Average distance error (root mean square) between the center of the reticle and the moving cursor during a "moderate" tracking period.
HARD:ERROR	Average distance error (root mean square) between the center of the reticle and the moving cursor during a "hard" tracking period.
AVG:TOT	Average amount of time the reticle was centered on the moving cursor over all tracking periods.
AVG:ERROR	Average distance error (root mean square) between the center of the reticle and the moving cursor over all tracking periods.

SCORING

The Apple II Plus microcomputer provided time on target and distance error data for each tracking period.

EQUIPMENT

1. Apple II Plus microcomputer generated the fixed reticle, the moving cursor, and collected performance data.

2. MIMCO joystick control was used by the subjects to control position of the moving cursor.

3. NEC 12-inch color video monitor used to display reticle and cursor.

4. Image combiner apparatus contained the NEC monitor.

APPROXIMATE ADMINISTRATION TIME

Instructions		4 minutes
Three Tracking Periods		8 minutes
	Total	12 minutes

TC DECISION MAKING (TCD)

SUBJECTS

M60A1 Tank Commander and Gunners

JUSTIFICATION

A critical component of target acquisition and target engagement is the decision the TC must make as to which target to engage. The purpose of this task is to ascertain the time it takes the TC to determine which target to engage and the accuracy of his decision.

CONDITION

Subjects stood in the open TC's hatch of an operational M60A1 tank parked in front of a 5.4 m x 1.8 m screen on which 35mm slide images of target vehicles were projected. A three-button response panel was fastened to the front of the TC's hatch opening to be used by subjects to indicate their decision. Figure A-1 contains a diagram of the test situation.

TASK DESCRIPTION

A set of three slides, with at least one slide containing a target vehicle, were simultaneously shown on the screen in front of the subject. The subject selected which target he would engage first. He indicated his choice by pressing one of three response buttons (corresponding to respective target images on the control box. Subjects completed 24 trials.

INDEPENDENT VARIABLES

Subjects completed 24 threat vehicle decision making trials.

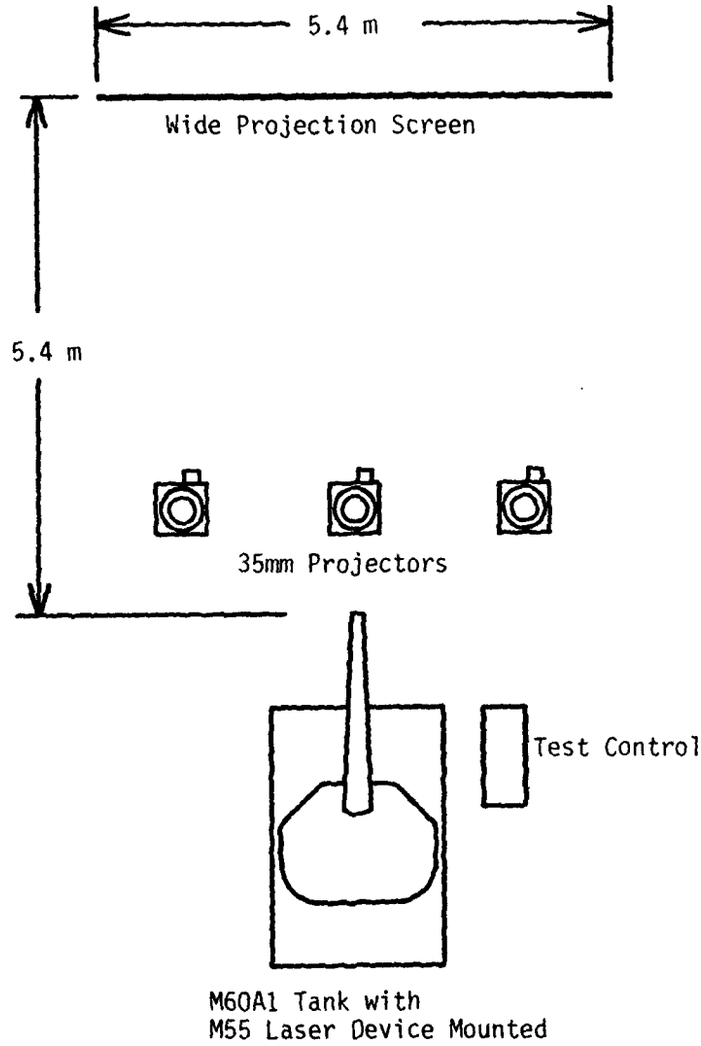

Figure A-1. Equipment Setup for the TC Decision Making, Hands-On Target Engagement, and Gun Laying Job Sample Tests

PROCEDURES

Subjects were told that the task was to decide from among the three slides presented on the screen which slide contained the highest threat vehicle and would be engaged first. Threat was determined by apparent relative distance among targets, vehicle type, and position of gun tube if any. Subjects were told to make their decisions based on their previous armor training and experience. No explicit decision rules were imposed for this task.

When subjects had made their decision, they were told to press one of three buttons (1 = left, 2 = center, and 3 = right) corresponding to the position on the screen of the vehicle of choice. They were told to decide as rapidly and accurately as possible.

The experimenter controlled the presentation of the sets of imagery using an electronic control apparatus. Each set of target slides appeared simultaneously. At slide presentation, a digital timer was started. When the subject pressed one of the three buttons, the timer stopped, a blank slide was placed in the projector, and a light on the control device indicated the choice made by the subject. The experimenter recorded the elapsed time data and the choice and initiated the next set of slides.

Slide carousels numbered 1, 2, and 3 were placed on the left, center, and right slide projectors in the following arrangements: 3 (left), 1 (center), 2 (right), 1 2 3, and 2 3 1. Arrangements were changed between subjects to provide a different slide arrangement--same set of slides but the correct slide could appear in any of the three positions for successive subjects.

DEPENDENT VARIABLES

The following dependent variables were collected:

D:CORR	The number of correct threat vehicle choices for the 24 trials.

D:TIME — Amount of time elapsed from the presentation of a set of threat vehicle images to the press of the choice button.

SCORING

Choices were indicated on the control-timer device and recorded on a TCD score sheet immediately after each trial. At a later time, responses were scored against an answer key.

Time was measured and displayed by the control-timer device. The experimenter recorded time data on the TCD score sheet immediately following each trial.

EQUIPMENT

1. Control-timer and response panel, built by SRL, was used to:
   - Control Initial Slide Advance
   - Measure Decision Making Time
   - Indicate Subject's Response
   - Automatically Advance to a Blank Slide Upon Completion of a Trial
2. Kodak Carousel slide projectors (3) with modified cabling to allow simultaneous advance of threat vehicle slides.

APPROXIMATE ADMINISTRATION TIME

Instructions	5 minutes
24 Scored Trials	5 minutes
Total	10 minutes

HANDS-ON GUN LAYING (HGL)

SUBJECTS

M60A1 Tank Commanders and Gunners

JUSTIFICATION

One of the critical components of target engagement is hand-off time, the time required to transfer a newly acquired target from the tank commander (TC) to the gunner. Hand-off time is partially determined by the accuracy of the TC's gun laying. The purpose of this job sample test was to obtain a measure of gun laying accuracy and time.

CONDITION

Subjects stood in the open TC hatch of an operational M60A1 tank parked in front of a 5.4 m x 1.8 m screen on which a gun laying target was projected (see Figure A-1). The M55 laser device was mounted to the tank and bore-sighted to score accuracy of the gun lay. The control-timer device measured gun lay time and controlled slide presention.

TASK DESCRIPTION

A single black dot approximately 6 cm in diameter on a clear background was used as the gun laying target. As soon as the dot appeared on the screen, subjects used the TC override control to lay the gun on the target dot. Time to lay on the target and distance from target were measured. Subjects completed three practice and 12 scored gun laying trials.

INDEPENDENT VARIABLES

Subjects completed 12 trials with the target dot appearing in a different location on each trial. The sequence of target dot locations were identical for each subject.

PROCEDURES

Subjects were told that the task was to use the TC override control to lay the gun as rapidly and accurately as possible on the target dot. Subjects were told that only a single dot would appear and that they were to lay the gun as soon as the dot appeared. Subjects were made aware of the fact that the M55 laser device would be used to score gun laying accuracy and that any previously used sighting procedures, techniques, or reference points should be adjusted accordingly. Subjects were given three practice trials to familiarize them with the test procedures. Upon completion of the practice trials, the subject completed 12 scored trials.

The experimenter used the control-timer to simultaneously advance three slides; one slide contained the target dot while the other two slides were clear. The subject laid the gun on the target dot and released the TC override palm switch as soon as he was satisfied with the gun lay. The experimenter recorded the time from the appearance of the target dot to the release of the palm switch. This time was measured by the control-timer device using electrical signals from the slide advance switch and the release of the palm switch.

The experimenter then advanced a grid slide from the projector which had presented the target dot slide for that trial. The grid slide had one solid cell approximately 6 cm square to represent the location of the target dot for that trial. The experimenter then directed the subject to use the trigger on the TC override control to activate the M55 laser device. No gun tube movement was allowed. The position of the laser dot, in X-Y grid units, relative to the target cell was recorded.

The position of the gun tube at the end of each trial was used as the starting position for the next trial.

DEPENDENT VARIABLES

The following dependent variables were collected:

GL:ERROR	The straight line distance in grid units from the target dot position and the M55 laser dot position.
GL:TIME	The amount of time from the appearance of the target dot slide to completion of the gun lay as indicated by the release of the TC override palm switch.

SCORING

Time was measured by and displayed on the control-timer device. The experimenter recorded the time on the HGL score sheet after each trial.

The experimenter recorded the X-Y grid coordinates of the M55 laser dot on the HGL score sheet after each trial. The vertical distance (a) and the horizontal distance (b) from the target dot to the laser dot were used to calculate the straight line distance (c) between the target dot and the laser dot. The formula was

$$c = \sqrt{a^2 + b^2}$$

EQUIPMENT

1. M60A1 Tank

2. The control-timer device, built by SRL, was used to:
   - Control Target and Grid Slide Advance
   - Measure Gun Laying Time

3. Kodak carousel slide projectors (3) with modified cabling to allow simultaneous advance of target dot slides.

4. M55 Laser Device was used to score accuracy of the gun lay.

APPROXIMATE ADMINISTRATION TIME

Instructions	3 minutes
3 Practice Trials	6 minutes
12 Scored Trials	20 minutes
Total	29 minutes

HANDS-ON TRACKING (HT)

SUBJECTS

M60A1 Tank Commanders and Gunners

JUSTIFICATION

Tracking is an important part of target engagement. Although the M-1 has automatic lead, the automatic computation of lead requires that the gunner track moving targets accurately for a minimum of two seconds.

CONDITION

Subjects performed tracking tasks from the gunner's position and the open hatch TC position on an M60A1 tank parked in front of a snakeboard (see Figure A-2).

TASK DESCRIPTION

Subjects tracked a snakeboard (see Figure A-3) using the TC override control for half the trials (open hatch) and the gunner's "Cadillac" control (gunner's sight) for the other half of the trials. The M55 laser device was mounted to the M60A1 and boresighted to the gunner's sight to serve as a scoring device. A laser pulser device pulsed the laser once per second for a one-minute period. The M60A1 triggers did not actuate the M55 for this test. The experimenter counted the number of laser pulses hitting the snakeboard track and noted the snakeboard track distance covered during the one-minute period.

INDEPENDENT VARIABLES

Three blocks of four trials were formed from the functional combination of tracking direction (left to right/right to left) and tracking position (TC/Gunner).

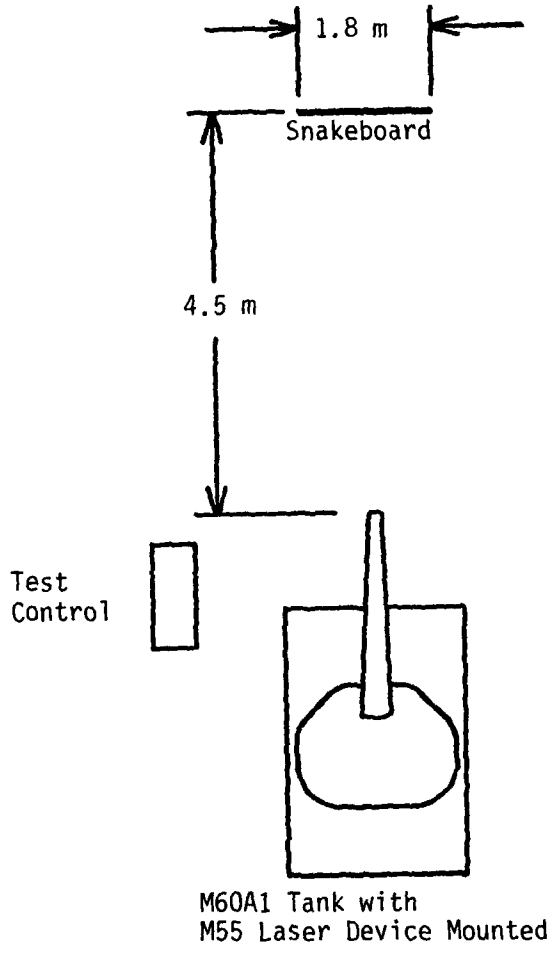

Figure A-2. Equipment Setup for Hands-On Tracking Job Sample Test

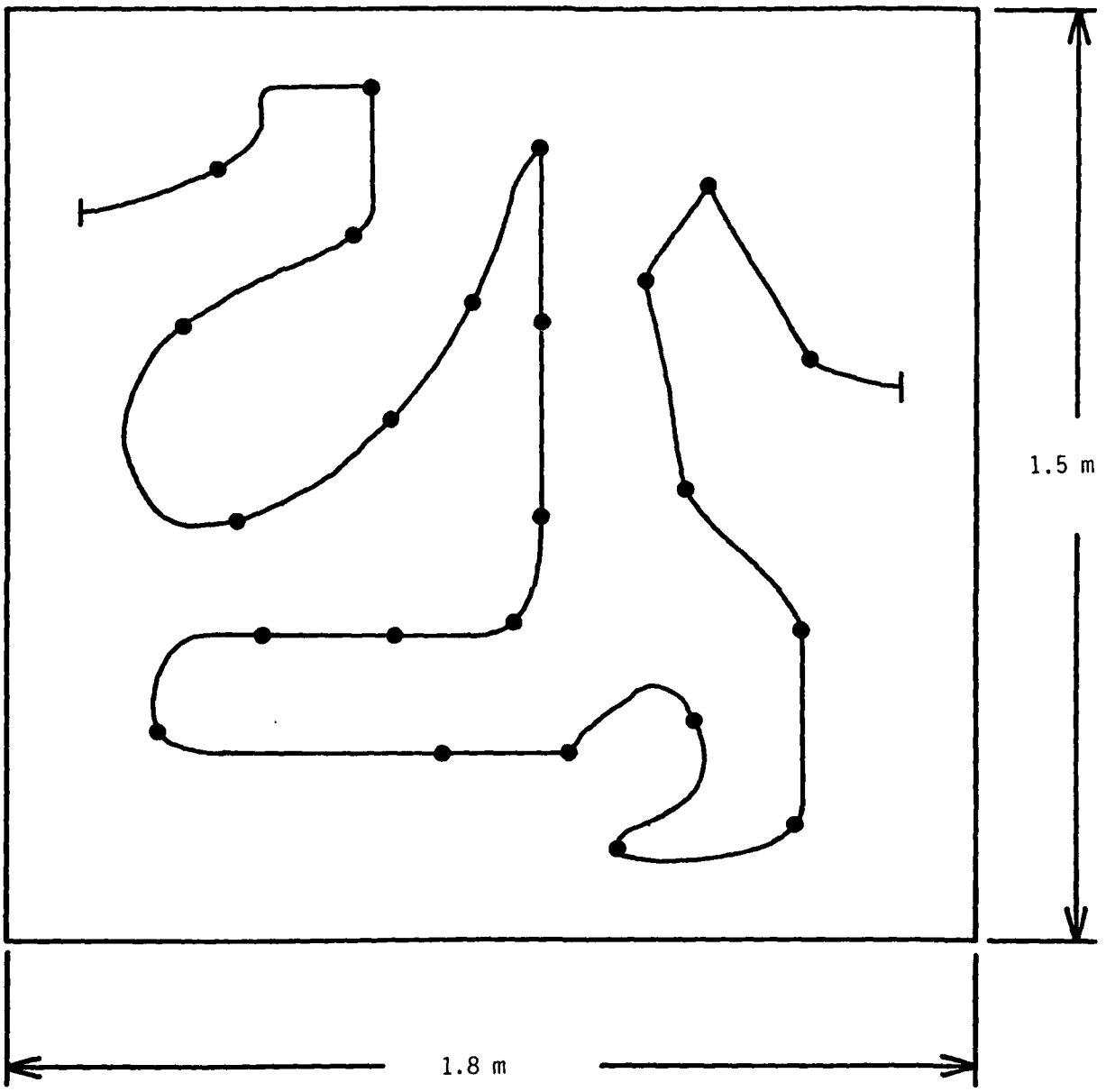

Figure A-3. Snakeboard and Snakeboard Track Used in the Hands-On Tracking Job Sample Test

PROCEDURES

Subjects were first briefed on the tracking task and how the test devices would operate. Each trial began with the steady laser beam aimed at the left or right origin of the snakeboard track. The subject was told to begin tracking as soon a the laser beam went off. This indicated the start of the one-minute tracking trail. The experimenter observed the laser pulses (one per second) and used a manual counter to tally each laser pulse which hit the snakeboard track. An audio alarm on the laser pulser device signaled the end of the one-minute trial. At that time the laser returned to a steady-on mode.

The experimenter recorded the number of hits for that trial and the location of the laser beam on the snakeboard track at the end of the one-minute trial. Subjects were instructed to track as rapidly and as accurately as possible. Subjects were told that the laser pulser controlled the laser; the triggers did not control the M55 during this test.

The sequence of tracking trials was varied depending on the subject's crew position. Tank commander subjects performed the first trial from the TC position and tracked from left to right. He then moved to the gunner's position for trials two (right to left) and three (left to right). He returned to the TC position for the fourth trial (right to left). Gunner subjects performed their first (left to right) and fourth (right to left) tracking trials at the gunner's position. The second (right to left) and third (left to right) tracking trials were performed from the TC position. All subjects completed three blocks of four trials during a single session.

DEPENDENT VARIABLES

The following dependent variables were measured:

TOT:HITS	The number of times the laser pulse hit the snakeboard track during the 12 trials.

TOT:DIST	The snakeboard track distance covered during the 12 trials.
TC:HITS	The number of times the laser pulse hit the snakeboard track during the six trials the subject tracked from the TC position.
TC:DIST	The snakeboard track distance covered during the six trials the subject tracked from the TC position.
G:HITS	The number of times the laser pulse hit the snakeboard track during the six trials the subject tracked from the gunner position.
G:DIST	The snakeboard track distance covered during the six trials the subject tracked from the gunner position.

SCORING

The experimenter used a manual counter to tally the number of laser pulses which hit the snakeboard track during each trial. The experimenter recorded the location of the laser beam in relation to the reference points at the completion of each trial. For scoring purposes the reference points were assigned numbers for each tracking direction, and the distance in inches was measured between reference points. At the end of a trial, the administrator recorded the last reference point passed and recorded a single digit to indicate the percentage of distance covered toward the next reference point. A 2 meant that the subject had covered 20 percent of the distance to the next reference point. This information was used during data reduction to calculate total distance covered during each trial.

EQUIPMENT

1. M60A1 Tank
2. M55 Laser Device
3. Laser Pulser Device, custom built by SRL, to pulse the M55 laser device at controlled rates for fixed periods of time.

APPROXIMATE ADMINISTRATION TIME

Instructions	2 minutes
12 Tracking Trials	20 minutes
Total	22 minutes

HANDS-ON TARGET ENGAGEMENT (HTE)

SUBJECTS

M60A1 Tank Commanders and Gunners

JUSTIFICATION

One of the most critical tasks performed by tank crews is target engagement. Target engagement requires performance of a sequence of tasks including TC decision making, gun laying and target hand-off to the gunner, and the gunner's precision lay on target and firing on target.

CONDITION

Subjects were seated at the gunner's position on an operational M60A1 tank parked in front of a 5.4 m x 1.8 m screen on which actual target scenes were projected (see Figure A-1). A senior NCO (TC experienced) assisted the experimenter by performing the duties of the TC. The M55 laser device was mounted to the tank and boresighted to score hits. The control-timer device measured time to lay gun and time for gunner to fire on target, and controlled target slide presentation.

TASK DESCRIPTION

The TC at the TC's hatch and the subject at the gunner's position were presented with target scenes. The TC, an assistant of the experimenter, knew what the target was and where it was located. He issued the appropriate fire command and laid the gun on target. When the subject called "identify," the TC released the TC override palm switch. The subject completed the engagement by firing on the target with the M55 laser device.

INDEPENDENT VARIABLES

Subjects completed 15 target engagement trials.

PROCEDURES

Subjects were briefed on the procedures and on the role of the TC. Subjects were told that as soon as they called "identify," the TC would release the TC override and that they were to complete the target engagement as rapidly and as accurately as possible.

The first trial began with the gun tube laid off to the left edge of the screen. The experimenter initiated the presentation of the target slides. All slides for a trial contained similar terrain but only one slide contained the target vehicle or vehicles. Target vehicles included jeeps, armored personnel carriers, and tanks. The TC issued the appropriate fire command for the type of target and used the TC override control to lay the gun on target.

As soon as the subject observed the target, through the gunner's primary sight, he called "identify." This signaled the TC to release the TC override palm switch which stopped the first timer in the control-timer device. The subject used the gunner's controls and sight to complete the engagement. When the gunner had the reticle centered on the target, he pulled the trigger which activated the M55 laser device and stopped the second timer. The TC and the experimenter observed whether the laser hit or missed the target.

At the completion of the trial, the experimenter recorded the time data and whether the target was hit or missed. The position of the gun tube at the completion of the trial was the starting point for the next trial.

DEPENDENT VARIABLES

The following dependent variables were measured:

TOT:HITS	The number of hits scored over the 15 target engagement trials.
TOT:TIME	The amount of time from the appearance of the target scene to trigger pull averaged over 15 trials.
TC:TIME	The amount of time from appearance of the target scene to the release of the TC override control palm switch (subject calls "identified") averaged over 15 trials.
G:TIME	The amount of time from release of the TC override control palm switch (subject calls "identified") to trigger pull averaged over 15 trials.

SCORING

Target accuracy was scored as a hit or miss on the first and only M55 laser firing as observed by the TC and the experimenter.

Time was measured by the control-timer device. Two timers were started upon initiation of the target scene. Timer 1 was stopped when the TC override control palm switch was released (TC:TIME), and Timer 2 was stopped when the subject pulled the trigger to fire on the target (TOT:TIME). G:TIME was calculated by subtracting TC:TIME from TOT:TIME.

EQUIPMENT

1. M60A1 Tank
2. Control-timer device, built by SRL, was used to:
   - Measure Time Data
   - Control Target Scene Presentation
3. M55 Laser Device
4. Kodak carousel projectors (3) with modified cabling to allow simultaneous presentation of target slides.

APPROXIMATE ADMINISTRATION TIME

Instructions	3 minutes
15 Scored Trials	20 minutes
Total	23 minutes

APPENDIX B

BIOGRAPHIC FORMS AND HANDS-ON JOB SAMPLE SCORE SHEETS

TANK COMMANDER
GENERAL INFORMATION SURVEY

BIOGRAPHIC INFORMATION

NAME: _____ SSN: ___-___-___ DATE _____
Last First MI Day Mo Yr

RANK: _____ PAY GRADE: _____ AGE: _____ MOS: _____ UNIT: _____

DATE ASSIGNED: _____ TOTAL TIME IN ARMY TO DATE: ____(Mos) ____(Yrs)

ETS DATE: ____(Mo) ____(Yr)

RANK & NAME OF YOUR PRESENT GUNNER: RANK: _____ NAME: _____
Last First

WHEN DO YOU EXPECT TO COMPLETE YOUR ASSIGNMENT IN YOUR PRESENT BATTALION? _____
(Mo) (Yr)

ARMOR EXPERIENCE

1. How long have you and your present gunner been assigned together? ____(Mos)

2. How long have you and your present gunner trained together as TC and Gunner? ____(Mos)

3. How long have you been a TC in your present company? ____(Mos)

4. How long have you and your current tank crew been assigned together as a complete crew? ____(Mos)

5. How long have you served as a TC on M60A1 tanks regardless of company or crew? ____(Mos) ____(Yrs)

6. How long have you served as a gunner on M60A1 tanks regardless of company or crew? ____(Mos) ____(Yrs)

7. How long have you served on M60A1 tanks regardless of duty position, company or crew? ____(Mos) ____(Yrs)

8. Have you ever served on M60A3 tanks? YES/NO If YES, in what positions and for how long? ____(Mos as Loader) ____(Mos as Driver) ____(Mos as Gunner) ____(Mos as TC)

9. When did you fire on Table VIII? Fill in the boxes of years in which you fired.

	1981	1980	1979	1978	1977	1976	1975	1974
Unit Assigned								
Type Tank								
Crew Position								
RATING Distinguished								
Qualified								
Unqualified								

TRAINING

10. When did you last fire subcaliber Tables or exercises? ___(Mo) ___(Yr)

11. When did you last attend training on threat vehicle identification or recognition? ____(Mo) ____(Yr)

12. When did you last participate as a TC on the Combat Training Theater (CTT) device? ____(Mo) ____(Yr)

13. Which Armor or CMF 19 courses have you completed, where and when did you complete them? (e.g., BNCOC at KNOX, 1979)

COURSE	WHERE	WHEN
_____	_____	_____
_____	_____	_____
_____	_____	_____

EDUCATIONAL BACKGROUND (Check Appropriate Items)

___ Attended high school ___ Graduated high school ___ Attended college

___ Attending high school ___ GED ___ Attending college

___ Graduated college

TRAINING DEVICES

The US Army is constantly involved in the development and acquisition of new individual gunnery training devices. Some of these devices may be similar to the electronic video games found in many amusement centers and department stores.

14. Do you enjoy playing electronic video games such as Space Invaders, Missile Command, Battle Zone, Asteroids, or Pac Man? YES/NO

15. Are games such as these available in your area? YES/NO

16. How frequently do you play electronic video games when they are available in your area?
___ once a month ___ more than once a week but less than every day
___ once a week ___ every day

17. If games like these were developed based on tank gunnery engagements, would you plan them? YES/NO

18. Would games like these be used more if they were located in the: (select 1st, 2nd and 3rd best choices by numbering items)
___ EM & NCO Clubs ___ Recreation Halls
___ Company Dayroom ___ Learning Center
___ Motor Pool

PT5448a

TANK GUNNER
GENERAL INFORMATION SURVEY

BIOGRAPHIC INFORMATION

NAME: _____ SSN: ___-___-___ DATE: _____
Last First MI Day Mo Yr

RANK: _____ PAY GRADE: _____ AGE: ____ MOS: _____ UNIT: _____

DATE ASSIGNED: _____ TOTAL TIME IN ARMY TO DATE: ___(Mos) ___(Yrs)

ETS DATE: _____(Mo) _____(Yr)

RANK & NAME OF YOUR PRESENT TANK COMMANDER (TC):
RANK: _____ NAME: _____
Last First

WHEN DO YOU EXPECT TO COMPLETE YOUR ASSIGNMENT IN YOUR PRESENT BATTALION? _____
Mo Yr

ARMOR EXPERIENCE

1. How long have you and your present TC been assigned together? ___(Mos)

2. How long have you and your present TC trained together as TC and Gunner? ___(Mos)

3. How long have you been a gunner in your present company? _____(Mos)

4. How long have you and your current tank crew been assigned together as a complete crew? _____(Mos)

5. How long have you served as a gunner on M60A1 tanks regardless of company or crew? _____(Mos) _____(Yrs)

6. Have you ever served as a TC on M60A1 tanks? YES/NO

7. How long have you served on M60A1 tanks regardless of duty position, company or crew? _____(Mos) ____(Yrs)

8. Have you ever served on M60A3 tanks? YES/NO If YES, in what positions and for how long? ___(Mos as Loader) ___(Mos as Driver) ___(Mos as Gunner) ___(Mos as TC)

9. When did you fire on Table VIII? Fill in the boxes of years in which you fired.

		1981	1980	1979	1978	1977	1976	1975	1974
Unit Assigned									
Type Tank									
Crew Position									
RATING	Distinguished								
	Qualified								
	Unqualified								

TRAINING

10. When did you last fire subcaliber Tables or exercises? ___(Mo) ___(Yr)

11. When did you last attend training on threat vehicle identification or recognition? ____(Mo) ____(Yr)

12. When did you last participate as a gunner on the Combat Training Theater (CTT) device? ____(Mo) ____(Yr)

13. Which Armor or CMF 19 courses have you completed, where and when did you complete them? (e.g., BNCOC at KNOX, 1979)

COURSE	WHERE	WHEN
_____	_____	_____
_____	_____	_____
_____	_____	_____

EDUCATIONAL BACKGROUND (Check Appropriate Items)

___ Attended high school
___ Attending high school
___ Graduated high school
___ GED
___ Attended college
___ Attending college
___ Graduated college

TRAINING DEVICES

The US Army is constantly involved in the development and acquisition of new individual gunnery training devices. Some of these devices may be similar to the electronic video games found in many amusement centers and department stores.

14. Do you enjoy playing electronic video games such as Space Invaders, Missile Command, Battle Zone, Asteroids, or Pac Man? YES/NO

15. Are games such as these available in your area? YES/NO

16. How frequently do you play electronic video games when they are available in your area?
___ once a month
___ once a week
___ more than once a week but less than every day
___ every day

17. If games like these were developed based on tank gunnery engagements, would you plan them? YES/NO

18. Would games like these be used more if they were located in the: (select 1st, 2nd and 3rd best choices by numbering items)
___ EM & NCO Clubs
___ Company Dayroom
___ Motor Pool
___ Recreation Halls
___ Learning Center

PT5448b

TC Decision Making Score Sheet

Name/Rank_____ Crew Position_____

Date_____ Experimenter_____

Check Arrangement____312____123____231

TRIAL	CHOICE	TIME	TRIAL	CHOICE	TIME
1			21		
2			22		
3			23		
4			24		
5			25		
6			26		
7			27		
8			28		
9			29		
10			30		
11			31		
12			32		
13			33		
14			34		
15			35		
16			36		
17			37		
18			38		
19			39		
20					

Gun Laying Score Sheet

Name/Rank_____Crew Position_____

Date_____Experimenter_____

TRIAL	ELAPSED TIME	GRID SCORE
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

HANDS-ON TRACKING SCORE SHEET

Name/Rank _____ Crew Position _____

Date _____ Experimenter _____

Position (TC/Gunner)	Direction (LR/RL)	Hits	Distance	
			Reference Point	Next Point

Gunner Engagement Score Sheet

Name/Rank_____Crew Position_____

Date_____Experimenter_____

TRIAL	TC TIME	FIRE TIME	HIT/MISS
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			

APPENDIX C

TABLES OF RESULTS:

COMPARISONS INVOLVING INDIVIDUAL JOB SAMPLES

GLOSSARY OF BIOGRAPHIC AND DEPENDENT VARIABLES

BIOGRAPHIC VARIABLES

Name	Description	Code Levels
AGE	Age	
EDUC	Highest Level of Education Attained	1 = Attended High School 2 = High School Graduate 3 = Attended College 4 = College Graduate
RANK	Rank (Pay Grade)	1 = E1 2 = E2 3 = E3 4 = E4, SP4 5 = E5, SP5 6 = E6 7 = E7
ARMY:TIME	Number Months in Army	
A1:TIME	Number Months Served in M60A1	
A3:TIME	Number Months Served in M60A3	
CP:TIME	Number Months in Current Crew Position	
SC:MLAST	Number Months Since Last Subcaliber Fire	
VRT:MLAST	Number Months Since Last Vehicle Recognition Training	
CTT:MLAST	Number Months Since Last CTT Training	
CO	Combat Composite Score from ASVAB	
GT	General Technical Composite Score from ASVAB	

GLOSSARY OF BIOGRAPHIC AND DEPENDENT VARIABLES (continued)

Name	Description	Code Levels
GAME:FREQ	Frequency With Which Play Computer Games	1 = Once Per Month 2 = Once Per Week 3 = More Than Once a Week 4 = Every Day
QAVG:TC	Average Score at Annual Qualifications During 1974-1981 when in Tank Commander Crew Position	1 = Unqualified 2 = Qualified 3 = Distinguished
QAVG:G	Average Score at Annual Qualifications During 1974-1981 when in Gunner Crew Position	See QAVG:TC
QAVG:TCG	Average Score at Annual Qualifications During 1974-1981 when in Either Tank Commander or Gunner Crew Position	See QAVG:TC
MRQ:TC	Score at Most Recent (1981) Annual Qualification when in TC Crew Position	See QAVG:TC
MRQ:G	Score at Most Recent (1981) Annual Qualification when in Gunner Crew Position	See QAVG:TC
MRQ:TCG	Score at Most Recent (1981) Annual Qualification when in Either Tank Commander or Gunner Crew Position	See QAVG:TC
COMPUTER PANEL		
ECD:CORR	Number Correct on Enter/Check Data (Maximum = 10)	
ECD:TIME	Average Time (seconds) to Complete Enter/Check Data Trial	

GLOSSARY OF BIOGRAPHIC AND DEPENDENT VARIABLES (continued)

Name	Description
CST:CORR	Number Correct on Self-Test (maximum = 10)
CST:TIME	Average Time (seconds) to Complete the Self-Test Trial
AVG:CORR	Number Correct Averaged Across Two Tasks
AVG:TIME	Completion Time Averaged Across Two Tasks
COMPUTER TRACKING	
EASY:TOT	Time on Target (sec) for Easy Tracking Task
EASY:ERROR	RMS error (number pixels) for Easy Tracking Task
MOD:TOT	Time on Target (sec) for Moderate Tracking Task
MOD:ERROR	RMS Error (number pixels) for Moderate Tracking Task
HARD:TOT	Time on Target (sec) for Hard Tracking Task
HARD:ERROR	RMS Error (number pixels) for Hard Tracking Task
AVG:TOT	Average Time on Target (sec)
AVG:ERROR	Average RMS Error (number pixels)
COMPUTER TARGET ENGAGEMENT	
3X:TIME	Average Time (sec) in 3X Segment
L1:TIME	Average Time (sec) in Laser 1 Segment

GLOSSARY OF BIOGRAPHIC AND DEPENDENT VARIABLES (continued)

Name	Description
L2:TIME	Average Time (sec) in Laser 2 Segment
F:TIME	Average Time (sec) in Fire Segment
10X:TIME	Average Total Time (sec) in 10X Segment
TOT:TIME (AVG)	Average Time (sec) from Beginning to End of Trial
TOT:TIME (MDN)	Median Time (sec) from Beginning to End of Trial
TANK COMMANDER DECISION MAKING	
D:CORR	Number of Correct Decisions
D:TIME	Time to Reach a Decision
HANDS-ON GUN LAYING	
GL:ERROR	Distance Between Actual Gun Lay and Target
GL:TIME	Time from Appearance of Target to Completed Gun Lay
HANDS-ON TRACKING	
TOT:HITS	Number Hits Averaged Across the TC and Gunner Station
TOT:DIST	Distance (inches) Tracked Averaged Across the TC and Gunner Station
TC:HITS	Number Hits at the TC Station
TC:DIST	Distance (inches) Tracked at the TC Station

GLOSSARY OF BIOGRAPHIC AND DEPENDENT VARIABLES (continued)

Name	Description
G:HITS	Number Hits at the Gunner Station
G:DIST	Distance (inches) Tracked at the Gunner Station

HANDS-ON TARGET ENGAGEMENT

TOT:HITS	Total Number of Hits in 15 Trials
TOT:TIME	Average Total Time (sec) from Onset of a Trial to Press of the Gunner's Trigger
TC:TIME	Average Time (sec) from Onset of a Trial to Point at which TC Removes Hands from TC Power Handle
G:TIME	Average Time (sec) from Point at which TC Removes Hands from TC Power Handle to Press of Gunner's Trigger

TABLE C-1. BIOGRAPHICAL DATA: ZERO-ORDER CORRELATIONS AMONG 18 MEASURES FOR TANK COMMANDERS (TC), GUNNERS (G), AND COMBINED (TCG) SUBSAMPLES

Dependent Measures		EDUC	RANK	ARMY: TIME	A1: TIME	A3: TIME	CP: TIME	SC: MLAST	VRT: MLAST	CTT: MLAST	CO	GT	GAME: FREQ	QAVG: TC	QAVG: G	QAVG: TCG	MRQ: TC	MRQ: G	MRQ: TCG
AGE	TC	.334*	.504**	.435**	.157	-.187	.315	-.019	-.071	-.231	.197	.213	-.357*	-.074	-.029	-.075	.014	---[1]	.067
	G	.233	.323*	.537***	.006	-.166	.064	.132	.081	-.010	-.217	-.198	-.065	.174	.112	-.052	.247	-.142	.045
	TCG	.337***	.613***	.628***	.360***	-.116	.423***	.133	.042	-.044	-.138	.118	-.110	.478**	.023	.041	.102	-.156	.195
EDUC	TC		.204	-.233	-.241	.311	-.084	.191	-.093	.115	-.183	-.092	-.167	.302	.111	-.057	.147	---	.127
	G		.270	.111	.120	-.142	.063	.163	-.049	.222	-.296	.205	.150	---	.154	.095	---	.102	.044
	TCG		.311**	.039	.052	-.000	.050	.202	-.057	-.044	-.258*	.032	-.045	.272	.129	.055	.097	.087	.120
RANK	TC			.420*	.111	-.035	.206	-.096	.090	.149	.067	-.005	-.188	-.171	-.010	.065	.001	---	.215
	G			.535***	.212	-.332*	.200	.269	.184	.153	-.243	-.221	.120	.235	.053	-.036	-.000	-.058	-.048
	TCG			.607***	.485***	-.149	.484***	.252*	.144	.195	-.267*	.064	.150	.144	.080	.103	.291	-.087	.252
ARMY:TIME	TC				.406*	-.217	.442**	-.077	.254	.133	-.026	-.052	-.005	-.345	-.166	-.010	.059	---	.062
	G				.267	-.336*	.273	.075	.180	.132	-.126	-.102	.250	-.153	.116	-.036	.016	-.163	.088
	TCG				.527***	-.202	.536***	.074	.219	.215	-.160	-.010	.157	-.227	-.025	-.049	.144	-.167	.206
A1:TIME	TC					-.029	.746	-.139	-.345	.356	.224	-.074	.052	-.170	-.313	-.067	.101	---	.101
	G					-.198	.625	.163	-.153	-.059	.059	-.099	.156	-.197	.173	.136	.144	-.033	.161
	TCG					-.069	.785***	.079	-.180	.303	.001	.032	.141	-.022	-.090	.075	-.232	-.048	-.251
A3:TIME	TC						.155	-.010	-.153	.120	-.224	-.117	.295	.102	-.036	.023	-.065	---	.119
	G						-.179	.219	-.078	-.259	.167	-.168	-.193	---	-.072	-.035	---	-.060	-.026
	TCG						.056	.125	-.096	-.075	.024	-.041	-.034	.142	.018	.013	.125	-.052	.071
CP:TIME	TC							.157	-.230	.114	.034	-.331	-.083	-.018	.177	.117	.278	---	.279
	G							.014	-.223	.003	-.154	-.149	.313*	.187	.002	.060	.255	-.212	.046
	TCG							.002	-.164	.157	-.149	-.175	.134	.136	-.075	.158	.343	-.190	.353
SC:MLAST	TC								.090	.326	-.061	.012	.178	.418*	.357	.394*	.184	---	.103
	G								.059	.310	.071	-.049	-.010	-.137	-.217	-.142	-.065	-.095	-.085
	TCG								.079	.311	-.012	.031	.094	.348*	.132	.187	.127	-.116	.106
VRT:MLAST	TC									-.171	-.338*	-.143	-.200	.278	-.093	.017	-.079	---	-.131
	G									.151	-.099	-.044	.020	-.157	-.104	-.116	-.313	.227	-.005
	TCG									-.106	-.197	-.077	-.062	.266	-.093	-.045	-.134	.150	-.043
CTT:MLAST	TC										-.085	-.048	.124	-.129	.263	.056	.361	---	.089
	G										-.254	.052	.154	-.454	-.295	-.353	1.000	---	-.090
	TCG										-.155	.001	.129	-.129	.129	-.022	.305	---	.073
CO	TC											.475**	-.026	-.041	.176	.133	.131	---	.156
	G											.533***	-.090	-.559	.046	-.144	-.755	---	-.353
	TCG											.436***	-.092	-.185	.032	-.059	-.133	---	-.133
GT	TC												-.168	-.069	.066	.115	-.170	---	-.145
	G												.032	-.459	.097	.007	-.526	---	-.278
	TCG												.114	-.057	.102	-.019	-.167	---	-.091
GAME:FREQ	TC													-.045	.336	.082	.164	---	.191
	G													.475	.102	.154	.535	-.200	.000
	TCG													.012	-.238	.135	.268	-.191	.141
QAVG:TC	TC														.275	.693***	.691***	---	.477*
	G														.434	.895**	.956***	---	.965**
	TCT														.245	.724***	.785***	---	.619***
QAVG:G	TC															.834***	.338	---	.360
	G															.935***	.470	.609**	.595**
	TCG															.335**	.129	.527***	.278
QAVG:TCG	TC																.652***	---	.652***
	G																.919**	.608**	.731***
	TCG																.719***	.595***	.676***
MRQ:TC	TC																	---	1.000***
	G																	---	1.000***
	TCG																	---	1.000***
MRQ:G	TC																		---
	G																		1.000***
	TCG																		1.000

* p < .05
** p < .01
*** p < .001

[1] Impossible to compute correlation because (1) n=0, or (2) SD=0

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TABLE C-2. COMPUTER PANEL JOB SAMPLE: ZERO-ORDER CORRELATIONS AMONG 6 MEASURES FOR TANK COMMANDERS (TC), GUNNERS (G), AND COMBINED (TCG) SUBSAMPLES

Dependent Measures		ECD: TIME	CST: CORR	CST: TIME	AVG: CORR	AVG: TIME
ECD:CORR	TC	.094	.491**	-.638***	.870***	-.392*
	G	.009	.049	-.073	.637***	-.040
	TCG	.039	.300*	-.374**	.787***	-.219
ECD:TIME	TC		-.159	.380*	-.034	.770***
	G		-.174	.421**	-.129	.831***
	TCG		-.171	.407***	-.087	.810***
CST:CORR	TC			-.624***	.857***	-.511**
	G			-.554***	.801***	-.439**
	TCG			-.589***	.824***	-.472***
CST:TIME	TC				-.731***	.883***
	G				-.472**	.855***
	TCG				-.602***	.866***
AVG:CORR	TC					-.521**
	G					-.363*
	TCG					-.435***

* $p \leq .05$
** $p \leq .01$
***$p \leq .001$

TABLE C-3. COMPUTER PANEL JOB SAMPLE: MEANS, STANDARD DEVIATIONS AND SIGNIFICANCE FOR TANK COMMANDERS (TC) GUNNERS (G), AND DRIVERS/LOADERS (DL) ON 6 DEPENDENT MEASURES

Dependent Measures		TC (n=27)	G (n=38)	DL (n=101)	F[1] Value
ECD:CORR	M	7.70	8.05	7.10	3.61*
	SD	2.37	1.51	1.99	
ECD:TIME	M	37.62	36.21	35.29	0.71
	SD	7.37	8.88	9.87	
CST:CORR	M	8.04	8.39	8.37	0.38
	SD	2.26	1.94	1.68	
CST:TIME	M	31.74	30.14	28.54	2.05
	SD	10.00	9.52	6.14	
AVG:CORR	M	7.87	8.22	7.73	1.55
	SD	2.00	1.26	1.37	
AVG:TIME	M	34.68	33.17	31.91	1.84
	SD	7.25	7.75	6.51	

* $p \leq .05$

[1]Tests significance of variation among means.

TABLE C-4. ZERO-ORDER CORRELATIONS BETWEEN BIOGRAPHICAL MEASURES (ARMY EXPERIENCE, TRAINING, TEST SCORES) AND MEASURES OF PERFORMANCE ON COMPUTER PANEL JOB SAMPLE FOR TANK COMMANDERS (TC), GUNNERS(G), AND COMBINED (TCG) SUBSAMPLES

Biographical Data		Computer Panel ECD: CORR	ECD: TIME	CST: CORR	CST: TIME	AVG: CORR	AVG: TIME
RANK	TC	.009	-.006	.210	.004	.124	-.000
	G	-.269	-.196	-.217	.063	-.328*	-.074
	TCG	-.165	-.037	-.117	.091	-.174	.038
ARMY:TIME	TC	.185	.105	-.241	.011	.228	.061
	G	-.074	-.076	-.099	.056	-.121	-.009
	TCG	.036	.050	.020	.072	.034	.073
A1:TIME	TC	-.023	-.009	-.073	.286	-.055	.193
	G	.186	-.257	.107	-.214	.029	-.233
	TCG	-.084	-.036	-.039	.094	-.075	.041
A3:TIME	TC	-.401*	-.218	-.022	.066	-.250	-.065
	G	.126	.017	.136	-.029	.180	-.008
	TCC	-.060	-.041	.084	-.004	.019	-.025
CP:TIME	TC	-.232	-.024	-.255	.320	-.281	.210
	G	-.119	-.168	-.062	-.070	-.119	-.140
	TCG	-.213	-.039	-.193	.169	-.251*	.087
SC:MLAST	TC	-.126	-.501*	.233	-.266	.049	-.436
	G	.055	.040	-.185	.099	-.100	.075
	TCG	-.100	-.200	.050	-.084	-.031	-.171
VRT:MLAST	TC	-.013	.151	-.154	.061	-.093	.118
	G	-.286	.003	-.117	-.028	-.263	-.016
	TCG	-.140	.063	-.139	.018	-.171	.045
CTT:MLAST	TC	.249	.206	.252	.057	.287	.153
	G	.170	-.308	.429	-.014	.410	-.246
	TCG	.220	.067	.254	.071	.281	.085
CO	TC	.309	-.235	.314	-.118	.352	-.189
	G	.376*	-.228	.050	-.185	.262	-.243
	TCG	.333*	-.257	.158	-.169	.292*	-.246
GT	TC	.198	-.251	.217	-.174	.240	-.248
	G	.186	-.257	-.123	-.102	.015	-.208
	TCG	.189	-.238	.076	-.138	.161	-.218
GAME:FREQ	TC	-.024	-.248	.036	-.192	.007	-.255
	G	-.250	-.188	.073	-.280	-.090	-.279
	TCG	-.137	-.204	.048	-.232	-.050	-.260*

* $p \leq .05$

TABLE C-5. COMPUTER TRACKING JOB SAMPLE: ZERO-ORDER CORRELATIONS AMONG 8 MEASURES FOR TANK COMMANDERS (TC), GUNNERS (G), AND COMBINED (TCG) SUBSAMPLES

Dependent Measures		EASY: ERROR	MOD: TOT	MOD: ERROR	HARD: TOT	HARD: ERROR	AVG: TOT	AVG: ERROR
EASY:TOT	TC	-.586***	.587***	-.462**	.805***	-.645***	.942***	-.748***
	G	-.581***	.649***	-.488***	.604***	-.535***	.913***	-.569***
	TCG	-.574***	.625***	-.474***	.692***	-.592***	.925***	-.640***
EASY:ERROR	TC		-.375*	.353	-.597***	.528**	-.667***	.752***
	G		-.465***	.691***	-.331*	.611***	-.518***	.837***
	TCG		-.427***	.566***	-.447***	.575***	-.582***	.804***
MOD:TOT	TC			-.532**	.758***	-.544***	.891***	-.709***
	G			-.599***	.717***	-.638***	.881***	-.631***
	TCG			-.575***	.733***	-.595***	.883***	-.660***
MOD:ERROR	TC				-.512**	.555**	-.583**	.749***
	G				-.564***	.897***	-.629***	.955***
	TCG				.541***	.747***	-.609***	.884***
HARD:TOT	TC					-.704***	.903***	-.762***
	G					-.617***	.811***	-.559***
	TCG					-.664***	.852***	-.641***
HARD:ERROR	TC						-.679***	.890***
	G						-.662***	.925***
	TCG						-.676***	.903***
AVG:TOT	TC							-.804***
	G							-.666***
	TCG							-.721***

* $p \leq .05$
** $p \leq .01$
***$p \leq .001$

TABLE C-6. COMPUTER TRACKING JOB SAMPLE: MEANS, STANDARD DEVIATIONS, AND SIGNIFICANCE FOR TANK COMMANDERS (TC), GUNNERS (G), AND DRIVERS/LOADERS (DL) ON 8 DEPENDENT MEASURES

Dependent Measures		TC (n=32)	G (n=51)	DL (n=101)	F[1] Value
EASY:TOT	n	32	51	101	
	M	17.56	20.77	24.77	4.83**
	SD	12.00	11.05	11.65	
EASY:ERROR	n	32	51	101	
	M	38.40	39.10	37.08	0.28
	SD	12.56	11.99	19.10	
MOD:TOT	n	31	51	99	
	M	13.94	14.86	19.74	9.45***
	SD	7.65	7.64	8.46	
MOD:ERROR	n	31	51	99	
	M	29.38	28.98	26.31	1.04
	SD	11.26	12.78	13.85	
HARD:TOT	n	26	43	93	6.02**
	M	6.50	7.88	9.67	
	SD	4.75	4.25	4.51	
HARD:ERROR	n	26	43	93	
	M	30.46	25.64	21.58	9.27***
	SD	14.91	12.06	5.98	
AVG:TOT	n	26	43	93	
	M	12.82	14.81	18.40	8.44***
	SD	7.34	6.71	6.90	
AVG:ERROR	n	26	43	93	
	M	33.86	31.30	28.48	3.01*
	SD	10.52	11.17	10.29	

* $p \leq .05$
** $p \leq .01$
*** $p \leq .001$

[1]Tests significance of variation among means.

TABLE C-7. ZERO-ORDER CORRELATIONS BETWEEN BIOGRAPHICAL MEASURES (ARMY EXPERIENCE, TRAINING, TEST SCORES) AND MEASURES OF PERFORMANCE ON COMPUTER TRACKING JOB SAMPLE FOR TANK COMMANDERS (TC), GUNNERS(G), AND COMBINED (TCG) SUBSAMPLES

		Computer Tracking							
Biographical Data		EASY: TOT	EASY: ERROR	MOD: TOT	MOD: ERROR	HARD: TOT	HARD: ERROR	AVG: TOT	AVG: ERROR
RANK	TC	-.151	.284	-.222	.279	-.367	.223	-.418	.333
	G	-.211	-.029	-.237	.207	-.062	.190	-.129	.093
	TCG	-.227*	.031	-.207	.166	-.199	.252	-.238	.190
ARMY:TIME	TC	-.293	.365*	-.103	.283	-.194	.027	-.263	.175
	G	-.228	-.112	-.209	.209	-.236	.179	-.294	.104
	TCG	-.279*	.117	-.161	.218	-.244*	.178	-.294	.182
A1:TIME	TC	-.367*	.288	-.304	.400*	-.081	.289	-.262	.439*
	G	-.151	.117	-.142	.154	-.091	.229	-.192	.255
	TCG	-.293**	.167	-.224*	.232*	-.149	.309**	-.266*	.346**
A3:TIME	TC	-.133	-.005	-.022	.433*	-.224	.182	-.105	.199
	G	.119	.016	.214	-.087	.114	-.009	160	.029
	TCG	.041	.009	.148	.030	.021	.043	.084	.025
CP:TIME	TC	-.358*	.299	-.312	.431*	-.214	.232	-.345	.391*
	G	-.215	.190	-.068	.299*	-.150	.335*	-.195	.350*
	TCG	-.314**	.205	-.201	.309**	-.230	.323**	-.303*	.367*
SC:MLAST	TC	.202	.036	.093	.071	.294	-.426*	.227	-.234
	G	.222	.165	-.171	.377*	-.139	.441**	.002	.397*
	TCG	.161	.095	-.065	.240	.027	.029	.051	.139
VRT:MLAST	TC	.062	-.044	.135	-.167	-.006	-.146	.108	-.201
	G	.147	-.039	.145	-.040	.060	-.066	.117	-.048
	TCG	.099	-.043	.134	-.087	.019	-.087	.098	-.097
CTT:MLAST	TC	.502*	-.155	.441	-.309	.564*	-.329	.599*	-.379
	G	-.064	-.346	-.217	.129	-.169	.212	-.287	-.065
	TCG	.372*	-.174	.248	-.214	.412*	-.222	.409*	-.295
CO	TC	-.142	-.062	-.257	.056	.100	.088	-.195	.170
	G	.234	-.165	.260	-.189	.383*	-.223	.347*	-.026
	TCG	.090	-.088	.066	-.102	.278	-.126	.159	-.083
GT	TC	.042	.066	.307	-.128	.237	-.086	.154	-.086
	G	.110	-.070	.333*	-.322*	.417*	-.289	.322	-.254
	TCG	.011	-.029	.300*	-.216	.285*	-.147	.201	-.151
GAME:FREQ	TC	.032	.161	.199	.177	.097	-.046	.122	.068
	G	-.026	-.105	.117	.024	-.122	-.058	-.074	-.026
	TCG	-.017	.009	.142	.081	-.040	-.039	-.003	.020

* $p \leq .05$
** $p \leq .01$

TABLE C-8. COMPUTER TARGET ENGAGEMENT (FULL SAMPLE): ZERO-ORDER CORRELATIONS AMONG 18 MEASURES FOR TANK COMMANDERS (TC), GUNNERS (G), AND COMBINED (TCG) SUBSAMPLES

Dependent Measures		3X: ERROR (AVG)	3X: ERROR (MDN)	L1: ERROR (AVG)	L1: ERROR (MDN)	L2: ERROR (AVG)	L2: ERROR (MDN)	F: ERROR (AVG)	F: ERROR (MDN)	10X: ERROR (AVG)	10X: ERROR (MDN)	3X: TIME	L1: TIME	L2: TIME	F: TIME	10X: TIME	TOT: TIME (AVG)	TOT: TIME (MDN)
PROC:ERROR	TC	.068	.089	.312	.208	.252	.293	.249	.185	.286	.245	-.185	-.271	[illegible]	.513**	-.173	-.212	-.276
	G	.159	.039	.098	-.090	.080	-.163	.118	-.119	.101	-.155	.273	.217	[illegible]	.563***	.337**	.328*	.323*
	TCG	.097	.091	.140	-.017	.115	-.024	.135	-.053	.134	-.031	.108	.054	-.106	.531***	.169	.155	.128
3X:ERROR(AVG)	TC		.843***	.246	.342	.097	.290	.271	.351*	.203	.342*	-.142	-.056	.317	-.026	-.029	-.207	-.124
	G		.782***	.346	.114	.285*	.074	.302*	.071	.322*	[illegible]	-.159	[illegible]	.177	.042	-.053	-.109	-.135
	TCG		.791***	.312**	.180	.248*	.143	.306**	.152	.363**	.163	-.193	-.092	.217	.026	-.045	-.124	-.119
2X:ERROR(MDN)	TC			.261	.323	.031	.250	.296	.349*	.148	.303*	-.447*	[illegible]	.184	.152	.083	-.190	-.177
	G			.188	.183	.247	.065	.132	.071	.221	[illegible]	-.194	[illegible]	.421**	.024	.023	-.092	-.135
	TCG			.197	.212	.180	.120	.200	.168	.200	.162	-.275*	[illegible]	.314**	.059	.042	-.116	-.129
L1:ERROR(AVG)	TC				.678***	.784***	.617*	.947***	.645***	.952***	.701***	-.155	-.177	[illegible]	.154	.073	.016	.091
	G				.558***	.848***	.652*	.962***	.582***	.963***	.684***	-.023	-.303*	[illegible]	.018	-.232	-.144	-.152
	TCG				.589***	.837***	.644*	.960***	.605***	.966***	.693***	-.004	-.210	.104	.048	-.154	-.093	-.078
L1:ERROR(MDN)	TC					.615***	.612***	.635***	.943***	.659***	.811***	-.122	[illegible]	[illegible]	-.001	[illegible]	[illegible]	.038
	G					.493***	.594***	.565***	.938***	.557***	.814***	[illegible]	[illegible]	[illegible]	-.150	-.413***	-.355*	-.343*
	TCG					.514***	.599***	.586***	.939***	.584***	.815***	-.165	[illegible]	[illegible]	-.117	-.306**	-.275*	-.232*
L2:ERROR(AVG)	TC						.726***	.767***	.534***	.920***	.780***	[illegible]	[illegible]	[illegible]	.101	.071	.016	.071
	G						.785***	.825***	.549***	.946***	.754***	[illegible]	-.144	.228	.029	-.072	.004	.004
	TCG						.782***	.816***	.553***	.943***	.762***	.103	[illegible]	.173	.048	-.036	.032	.043
L2:ERROR(MDN)	TC							.570***	.542***	.714***	.957***	-.152	[illegible]	-.217	.133	-.064	-.125	-.048
	G							.635***	.674***	.735***	.947***	-.053	[illegible]	[illegible]	-.145	-.160	-.130	-.035
	TCG							.620***	.642***	.728***	.949***	[illegible]	-.143	-.041	-.081	-.147	-.121	-.075
F:ERROR(AVG)	TC								.642***	.941***	[illegible]	-.179	[illegible]	-.093	.122	.069	.001	.076
	G								.613***	.959***	.662***	-.058	-.335*	[illegible]	.006	-.376**	-.164	-.165
	TCG								.633***	.957***	.631***	-.142	[illegible]	.144	.031	-.163	-.112	-.093
F:ERROR(MDN)	TC									.633***	.707***	[illegible]	[illegible]	-.224	[illegible]	.102	.017	.114
	G									.605***	.868***	[illegible]	[illegible]	[illegible]	-.173	-.240	-.318*	-.277*
	TCG									.620***	.845***	-.143	-.157*	[illegible]	-.135	-.262*	-.227*	-.170
10X:ERROR(AVG)	TC										.764***	-.011	[illegible]	[illegible]	.155	.076	.042	.109
	G										.741***	[illegible]	[illegible]	[illegible]	.016	-.175	-.092	-.095
	TCG										.753***	[illegible]	[illegible]	[illegible]	.045	-.113	-.049	-.034
10X:ERROR(MDN)	TC											-.152	[illegible]	[illegible]	.077	-.023	-.191	-.079
	G											-.132	-.312*	[illegible]	-.164	-.249*	-.231	-.134
	TCG											-.115	-.213*	-.143	-.108	-.219*	-.186	-.135
3X:TIME	TC												[illegible]	[illegible]	.244	.413**	.816***	.763***
	G												[illegible]	[illegible]	.273***	.757***	.927***	.931***
	TCG												.583***	.143	[illegible]	.650***	.895***	.846***
L1:TIME	TC													[illegible]	.019	.953***	.803***	.826***
	G													.344	.452***	.948***	.896***	.835***
	TCG													[illegible]	.326**	.948***	.860***	.865***
L2:TIME	TC														.042	[illegible]	[illegible]	.111
	G														.275	[illegible]	.279*	.211
	TCG														.208	[illegible]	[illegible]	[illegible]
F:TIME	TC															.172	[illegible]	.135
	G															[illegible]	[illegible]	[illegible]
	TCG															.587***	[illegible]	[illegible]
10X:TIME	TC																[illegible]	[illegible]
	G																.947***	.915***
	TCG																.921***	.887***
TOT:TIME(AVT)	TC																	.913***
	G																	[illegible]
	TCG																	.955***

* p < .05
** p < .01
***p < .001

TABLE C-9. COMPUTER TARGET ENGAGEMENT JOB SAMPLE: MEANS, STANDARD DEVIATIONS, AND SIGNIFICANCE FOR TANK COMMANDERS (TC), GUNNERS (G), AND DRIVERS/LOADERS (DL) ON 18 DEPENDENT MEASURES

Dependent Measures		TC (n=32)	G (n=51)	DL (n=101)	F[1] Value
PROC:ERROR	M	4.56	4.06	2.37	10.76***
	SD	3.06	3.15	2.46	
3X:ERROR(AVG)	M	26.71	29.53	32.65	3.09*
	SD	10.25	12.37	13.16	
3X:ERROR(MDN)	M	16.77	15.98	18.86	0.98
	SD	10.96	11.29	13.75	
L1:ERROR(AVG)	M	12.00	14.04	15.05	2.56
	SD	4.54	7.01	7.05	
L1:ERROR(MDN)	M	6.13	6.76	6.47	0.36
	SD	1.84	2.92	3.78	
L2:ERROR(AVG)	M	14.50	16.70	18.78	2.36
	SD	6.54	10.25	10.98	
L2:ERROR(MDN)	M	9.28	10.65	11.75	0.84
	SD	7.21	9.31	10.55	
F:ERROR(AVG)	M	12.45	14.59	15.49	2.22
	SD	4.52	7.37	7.63	
F:ERROR(MDN)	M	6.18	7.11	6.76	0.66
	SD	1.67	2.90	4.31	
10X:ERROR(AVG)	M	12.98	15.11	16.44	2.58
	SD	4.88	7.85	8.17	
10X:ERROR(MDN)	M	7.20	8.18	8.33	0.66
	SD	3.22	4.57	5.44	
3X:TIME	M	10.64	12.19	14.16	4.79**
	SD	4.15	5.11	6.91	
L1:TIME	M	12.83	12.83	14.21	1.39
	SD	4.41	4.63	6.33	
L2:TIME	M	1.69	1.62	2.44	4.65*
	SD	1.27	1.37	2.05	

TABLE C-9. COMPUTER TARGET ENGAGEMENT JOB SAMPLE: MEANS, STANDARD DEVIATIONS, AND SIGNIFICANCE FOR TANK COMMANDERS (TC), GUNNERS (G), AND DRIVERS/LOADERS (DL) ON 18 DEPENDENT MEASURES (continued)

Dependent Measures		TC (n=32)	G (n=51)	DL (n=101)	F[1] Value
F:TIME	M	2.66	2.71	3.25	1.48
	SD	1.36	2.09	2.46	
10X:TIME	M	16.13	16.17	18.52	2.52
	SD	4.79	5.96	8.17	
TOT:TIME(AVG)	M	26.76	28.36	32.69	4.50*
	SD	7.52	10.37	12.74	
TOT:TIME(MDN)	M	24.36	25.89	30.07	5.08**
	SD	6.77	8.78	11.84	

* $p \leq .05$
** $p \leq .01$
***$p \leq .001$

[1]Tests significance of variation among means.

TABLE C-10. ZERO-ORDER CORRELATIONS BETWEEN BIOGRAPHICAL MEASURES (ARMY EXPERIENCE TRAINING, TEST SCORES) AND MEASURES OF PERFORMANCE ON COMPUTER TARGET ENGAGEMENT JOB SAMPLE FOR TANK COMMANDERS (TC), GUNNERS (G), AND COMBINED (TCG) SUBSAMPLES

		Computer Target Engagement																
Biographical Data		PROG: ERROR	3X: ERROR (AVG)	3X: ERROR (MDN)	L1: ERROR (AVG)	L1: ERROR (MDN)	L2: ERROR (AVG)	L2: ERROR (MDN)	F: ERROR (AVG)	F: ERROR (MDN)	10X: ERROR (AVG)	10X: ERROR (MDN)	3X: TIME	L1: TIME	L2: TIME	F: TIME	10X: TIME	TOT: TIME (AVG)	TOT: TIME (MDN)
RANK	TC	.105	-.035	-.001	.175	.160	.196	.041	.198	.234	.203	.101	.168	-.061	-.097	.299	-.004	.089	-.024
	G	.338*	.134	.011	.118	.010	.130	.045	.134	-.057	.134	.020	-.054	-.111	.024	.208	-.008	-.031	-.031
	TCG	.239*	-.038	.026	-.032	-.064	.012	-.028	-.020	-.135	-.011	-.069	-.122	-.063	.031	.143	-.014	-.065	-.111
ARMY:TIME	TC	-.256	.317	.363*	.285	.244	.064	.032	.319	.287	.215	.120	.068	.341	.090	-.034	.316*	.238	.219
	G	.035	-.097	-.023	-.149	-.098	-.117	-.132	-.116	-.122	-.132	-.136	.074	.155	-.070	-.001	.116	.103	.096
	TCG	-.045	.014	.160	-.053	-.025	-.091	-.077	-.033	-.057	-.066	-.070	-.028	.198	-.010	-.013	.157	.078	.073
AI:TIME	TC	-.162	-.064	.143	-.096	-.150	-.063	.024	-.098	-.117	-.085	-.031	-.045	-.039	-.205	-.065	-.081	-.076	-.124
	G	-.149	-.182	-.201	-.205	-.239	-.129	-.097	-.205	-.220	-.181	-.163	.119	.213	.045	.102	.212	.180	.123
	TCG	-.082	-.142	-.004	-.203	-.214	-.135	-.070	-.200	-.225*	-.182	-.139	-.054	.069	-.041	.020	.050	.007	-.040
AB:TIME	TC	-.112	-.197	-.294	-.217	-.218	-.199	-.130	-.251	-.225	-.233	-.177	.461**	-.089	-.226	-.117	-.133	.169	.166
	G	.054	.082	-.068	-.140	-.099	-.163	-.108	-.145	-.081	-.158	-.111	.116	.198	-.133	.019	.152	.144	.169
	TCG	-.017	.013	-.126	-.157	-.124	-.171	-.113	-.166	-.109	-.174	-.127	.191	.119	-.157	-.009	.084	.147	.166
GP:TIME	TC	-.207	.122	.227	.027	.033	.019	.141	-.040	.012	.005	.114	.147	.040	-.119	-.034	.005	.065	.035
	G	-.150	-.011	.023	-.099	-.118	-.064	-.047	-.077	-.146	-.082	-.101	.062	.048	.201	.007	.065	.068	.018
	TCG	-.107	-.020	.111	-.113	-.128	-.078	-.003	-.124	-.149	-.107	-.059	-.031	.037	.052	-.012	.030	.017	-.024
SC:MLAST	TC	.055	-.167	-.156	.321	.134	.275	.183	.358	.147	.333*	.188	.108	.011	-.236	.284	.058	.095	.135
	G	.295	.168	-.008	.041	-.054	.074	-.064	.061	-.079	.063	-.073	.205	.196	.199	.232	.246	.243	.199
	TCG	-.197	-.016	-.073	.103	-.010	.124	.034	.124	-.032	.124	.015	.134	.110	-.002	.252*	.164	.165	.154
VRT:MLAST	TC	.233	.384*	.371*	.423*	.355	.130	.025	.373	.422*	.307*	.157	-.192	.151	.058	.097	.158	-.003	.087
	G	.045	.197	.152	.127	.032	.275	.144	.130	-.059	.197	.092	-.016	-.054	-.059	-.172	-.106	-.069	-.033
	TCG	.123	.248*	.239	.201	.120	.212	.094	.184	.068	.211	.106	-.083	.030	-.015	-.084	-.039	-.050	.000
CTT:MLAST	TC	-.434	-.067	-.163	-.355	-.194	-.344	-.241	-.371	.003	-.379	-.224	-.020	.014	-.210	-.350	-.069	-.053	.031
	G	.162	.095	.255	.435	-.070	.606*	.359	.532*	-.013	.563*	.270	.232	.202	.613*	.129	.250	.251	.207
	TCG	-.259	-.026	.022	-.116	-.139	-.022	-.080	-.060	-.011	-.060	-.090	.021	.039	.056	-.109	.010	.017	.044
CO	TC	.155	-.187	-.102	-.015	-.196	.050	-.112	.208	-.107	.092	-.146	-.157	-.359	-.141	.079	-.331	-.281	-.310
	G	-.163	-.226	-.311*	-.073	-.073	-.129	-.187	-.043	-.022	-.091	-.145	-.063	.048	-.052	-.140	-.003	-.034	-.006
	TCG	-.048	-.177	-.226	-.021	-.076	-.054	-.133	-.053	-.006	-.013	-.106	-.073	-.087	-.092	-.063	-.057	-.094	-.092
GT	TC	-.228	-.157	-.120	-.155	-.177	-.008	-.110	-.038	-.130	-.099	-.138	-.184	-.271	.144	-.047	-.242	-.251	-.225
	G	-.252	-.215	-.181	-.091	-.050	-.019	-.121	-.085	-.049	-.063	-.102	-.046	.010	-.103	-.125	-.025	-.037	-.005
	TCG	-.221	-.195	-.128	-.135	-.116	-.066	-.122	-.090	-.100	-.093	-.128	-.126	-.128	.078	-.085	-.121	-.136	-.109
GAME:FREQ	TC	-.095	-.115	-.081	-.335	-.178	-.371	.222	-.309	-.210	-.342*	-.236	.041	-.268	-.156	.129	-.216	-.115	-.216
	G	-.061	.206	.174	.029	.051	-.071	.086	.064	.058	-.002	.081	-.190	-.140	.033	.029	-.092	-.146	-.118
	TCG	-.064	.074	.075	-.097	-.030	-.154	-.029	-.062	-.038	-.115	-.034	-.123	-.190	-.032	.057	-.135	-.142	-.159

* $p \leq .05$
** $p \leq .01$

TABLE C-11. TC DECISION MAKING JOB SAMPLE: ZERO-ORDER CORRELATION BETWEEN 2 MEASURES FOR TANK COMMANDERS (TC), GUNNERS (G), AND COMBINED (TCG) SUBSAMPLES

Dependent Measures		D:TIME
D:CORR	TC	.019
	G	.060
	TCG	.047

TABLE C-12. ZERO-ORDER CORRELATIONS BETWEEN BIOGRAPHICAL MEASURES (ARMY EXPERIENCE, TRAINING, TEST SCORES) AND MEASURES OF PERFORMANCE ON TC DECISION MAKING JOB SAMPLE FOR FOR TANK COMMANDERS (TC), GUNNERS (G), AND COMBINED (TCG) SUBSAMPLES

Biographical Data		TC Decision Making D: CORR	D: TIME
RANK	TC	-.202	-.065
	G	-.090	-.030
	TCG	-.083	-.102
ARMY:TIME	TC	-.444**	.219
	G	-.037	-.028
	TCG	-.234*	.008
A1:TIME	TC	-.188	.195
	G	.238	-.076
	TCG	.093	-.036
A3:TIME	TC	.015	.038
	G	.071	-.063
	TCG	.051	-.041
SC:MLAST	TC	-.127	-.050
	G	.161	.185
	TCG	.003	.067
VRT:MLAST	TC	-.264	-.206
	G	-.046	-.044
	TCG	-.143	-.114
CP:TIME	TC	-.293	.228
	G	.052	.008
	TCG	-.121	.040
CTT:MLAST	TC	.043	-.193
	G	.500*	.042
	TCG	.148	-.096
CO	TC	-.049	-.093
	G	.030	-.156
	TCG	-.010	-.101
GT	TC	.133	.085
	G	.033	-.111
	TCG	.093	-.036
GAME:FREQ	TC	-.143	-.094
	G	-.140	.121
	TCG	-.142	.030

* $p \leq .05$
** $p \leq .01$

TABLE C-13. HANDS-ON GUN LAYING JOB SAMPLE: ZERO-ORDER CORRELATION BETWEEN 2 MEASURES FOR TANK COMMANDERS (TC), GUNNERS (G), AND COMBINED (TCG) SUBSAMPLES

Dependent Measures		GL:ERROR
GL:TIME	TC	-.130
	G	.051
	TCG	.013

TABLE C-14. ZERO-ORDER CORRELATIONS BETWEEN BIOGRAPHICAL MEASURES (ARMY EXPERIENCE, TRAINING, TEST SCORES) AND MEASURES OF PERFORMANCE ON HANDS-ON GUN LAYING JOB SAMPLE FOR FOR TANK COMMANDERS (TC), GUNNERS (G), AND COMBINED (TCG) SUBSAMPLES

Biographical Data		GL: TIME	GL: ERROR
RANK	TC	-.025	.250
	G	-.098	.067
	TCG	-.309**	.028
ARMY:TIME	TC	-.195	.449**
	G	-.062	.063
	TCG	-.260*	.198
A1:TIME	TC	-.319	-.005
	G	.116	-.091
	TCG	-.247*	-.071
A3:TIME	TC	.168	-.273
	G	.020	.051
	TCG	.040	-.051
CP:TIME	TC	-.120	.055
	G	-.027	.040
	TCG	-.231*	.006
SC:MLAST	TC	.313	-.197
	G	.144	-.002
	TCG	.127	-.116
VRT:MLAST	TC	-.134	.231
	G	.120	.238
	TCG	.010	.226
CTT:MLAST	TC	-.271	-.103
	G	.337	.205
	TCG	-.140	-.066
CO	TC	-.304	-.088
	G	-.104	-.[illegible]*
	TCG	-.052	-.18[illegible]
GT	TC	.086	-.095
	G	-.281	-.188
	TCG	-.123	-.145
GAME:FREQ	TC	.073	-.203
	G	.016	.062
	TCG	.004	-.056

* $p \leq .05$
** $p \leq .01$

TABLE C-15. HANDS-ON TRACKING JOB SAMPLE: ZERO-ORDER CORRELATIONS AMONG 6 MEASURES FOR TANK COMMANDERS (TC), GUNNERS (G), AND COMBINED (TCG) SUBSAMPLES

Dependent Measures		TOT: DIST	TC: HITS	TC: DIST	G: HITS	G: DIST
TOT:HITS	TC	-.504**	.919***	-.512**	.776***	-.463**
	G	-.536***	.959***	-.506***	.915***	-.534***
	TCG	-.485***	.939***	-.472***	.853***	-.468***
TOT:DIST	TC		-.419*	.960***	-.461**	.969***
	G		-.535***	.970***	-.460***	.971***
	TCG		-.423**	.968***	-.457***	.971***
TC:HITS	TC			-.437**	.465**	-.376*
	G			-.522***	.763***	-.517***
	TCG			-.429***	.622***	-.399***
TC:DIST	TC				-.452**	.861***
	G				-.411**	.884***
	TCG				-.424***	.879***
G:HITS	TC					-.438**
	G					-.481***
	TCG					-.461***

* $p \leq .05$
** $p \leq .01$
*** $p \leq .001$

TABLE C-16. ZERO-ORDER CORRELATIONS BETWEEN BIOGRAPHICAL MEASURES (ARMY EXPERIENCE, TRAINING, TEST SCORES) AND MEASURES OF PERFORMANCE ON HANDS-ON TRACKING JOB SAMPLE FOR TANK COMMANDERS (TC), GUNNERS(G), AND COMBINED (TCG) SUBSAMPLES

		Hands-On Tracking					
Biographical Data		TOT: HITS	TOT: DIST	TC: HITS	TC: DIST	G: HITS	G: DIST
RANK	TC	-.115	.059	-.171	.071	.016	.044
	G	.055	.119	.060	.142	.039	.090
	TCG	.100	.209	.149	.215*	.001	.190
ARMY:TIME	TC	-.130	.209	-.085	.252	-.153	.155
	G	-.120	.198	-.174	.268	-.027	.118
	TCG	-.056	.268*	-.019	.307**	-.099	.215*
AI:TIME	TC	-.086	.162	-.155	.172	.055	.143
	G	-.035	.096	-.049	.128	-.008	.059
	TCG	.015	.205	.019	.216*	.006	.183
A3:TIME	TC	.082	-.049	.064	-.052	.081	-.043
	G	-.163	-.005	-.119	-.054	-.201	.045
	TCG	-.085	-.009	-.050	-.044	-.118	.025
CP:TIME	TC	-.087	.140	-.102	.208	-.322	.070
	G	-.069	.227	-.125	.286*	.021	.155
	TCG	-.003	.242*	.008	.290**	-.019	.183
SC:MLAST	TC	.144	-.230	.172	-.218	.081	-.224
	G	-.283	.016	-.245	.054	-.290	-.021
	TCG	-.061	-.056	-.021	-.034	-.117	-.074
VRT:MLAST	TC	-.058	.091	-.015	.105	-.119	.072
	G	-.027	-.129	-.018	-.140	-.035	-.110
	TCG	-.031	-.018	-.005	-.022	-.065	-.014
CTT:MLAST	TC	.129	.028	.188	-.000	-.022	.050
	G	-.406	.072	-.393	.214	-.387	-.058
	TCG	.038	.067	.112	.081	-.097	.051
CO	TC	-.230	.268	-.152	.178	-.262	.326
	G	.246	-.064	.235	-.076	.221	-.049
	TCG	.058	.013	.044	-.020	.063	.043
GT	TC	-.185	.194	-.238	.131	-.035	.235
	G	.183	.025	.121	.034	.243	.015
	TCG	.007	.126	-.047	.097	.087	.144
GAME:FREQ	TC	.092	.187	.106	.175	.037	.185
	G	.160	-.227	.071	-.200	.264	-.240
	TCG	.143	-.041	.103	-.035	.171	-.044

* $p \leq .05$
** $p \leq .01$

TABLE C-17. HANDS-ON TARGET ENGAGEMENT: ZERO-ORDER CORRELATIONS AMONG 4 MEASURES FOR TANK COMMANDERS (TC), GUNNERS (G), AND COMBINED (TCG) SUBSAMPLES

Dependent Measures		TOT: TIME	TC: TIME	G: TIME
TOT:HITS	TC	-.122	-.209	.110
	G	.033	.072	-.086
	TCG	-.045	-.053	.000
TOT:TIME	TC		.927***	.662***
	G		.931***	.461***
	TCG		.929***	.537***
TC:TIME	TC			.332
	G			.106
	TCG			.187

***$p \leq .001$

TABLE C-18. ZERO-ORDER CORRELATIONS BETWEEN BIOGRAPHICAL MEASURES (ARMY EXPERIENCE, TRAINING, TEST SCORES) AND MEASURES OF PERFORMANCE ON HANDS-ON TARGET ENGAGEMENT JOB SAMPLE FOR TANK COMMANDERS (TC), GUNNERS (G), AND COMBINED (TCG) SUBSAMPLES

		Hands-On Target Management			
Biographical Data		TOT: HITS	TOT: TIME	TC: TIME	G: TIME
RANK	TC	.031	.006	-.070	.153
	G	.157	.141	.184	-.053
	TCG	.004	.011	.008	.010
ARMY:TIME	TC	.112	-.009	-.000	-.024
	G	.068	.221	.242	.017
	TCG	.026	.045	.056	-.009
A1:TIME	TC	.300	-.014	-.094	.150
	G	.070	.117	.087	.098
	TCG	.069	-.000	-.052	.107
A3:TIME	TC	-.035	.350*	.400*	.080
	G	-.039	-.155	-.121	-.118
	TCG	-.044	.002	.028	-.056
CP:TIME	TC	.126	.051	-.007	.142
	G	.145	-.072	-.030	-.112
	TCG	.053	-.036	-.058	.031
SC:MLAST	TC	.084	.098	.089	.058
	G	.187	.120	.108	.081
	TCG	.127	.096	.082	.070
VRT:MLAST	TC	-.052	-.163	-.110	-.173
	G	-.020	.044	.049	.006
	TCG	-.027	-.048	-.021	-.072
CTT:MLAST	TC	.107	-.009	.056	-.107
	G	-.143	-.160	-.202	.152
	TCG	.064	-.059	-.057	-.028
CO	TC	.068	-.006	-.080	.167
	G	-.031	-.097	-.058	-.108
	TCG	.016	-.035	-.038	-.003
GT	TC	-.006	-.042	-.088	.069
	G	-.051	-.142	-.195	.092
	TCG	-.057	-.097	-.148	.078
GAME:FREQ	TC	.144	-.209	-.113	-.302
	G	-.237	.167	.190	-.001
	TCG	-.127	-.003	.059	-.128

* $p \leq .05$

APPENDIX D

TABLES OF RESULTS:

COMPARISONS INVOLVING INTERRELATIONSHIPS AMONG JOB SAMPLES

GLOSSARY OF BIOGRAPHIC AND DEPENDENT VARIABLES

BIOGRAPHIC VARIABLES

Name	Description	Code Levels
AGE	Age	
EDUC	Highest Level of Education Attained	1 = Attended High School 2 = High School Graduate 3 = Attended College 4 = College Graduate
RANK	Rank (Pay Grade)	1 = E1 2 = E2 3 = E3 4 = E4, SP4 5 = E5, SP5 6 = E6 7 = E7
ARMY:TIME	Number Months in Army	
A1:TIME	Number Months Served in M60A1	
A3:TIME	Number Months Served in M60A3	
CP:TIME	Number Months in Current Crew Position	
SC:MLAST	Number Months Since Last Subcaliber Fire	
VRT:MLAST	Number Months Since Last Vehicle Recognition Training	
CTT:MLAST	Number Months Since Last CTT Training	
CO	Combat Composite Score from ASVAB	
GT	General Technical Composite Score from ASVAB	

GLOSSARY OF BIOGRAPHIC AND DEPENDENT VARIABLES (continued)

Name	Description	Code Levels
GAME:FREQ	Frequency With Which Play Computer Games	1 = Once Per Month 2 = Once Per Week 3 = More Than Once a Week 4 = Every Day
QAVG:TC	Average Score at Annual Qualifications During 1974-1981 when in Tank Commander Crew Position	1 = Unqualified 2 = Qualified 3 = Distinguished
QAVG:G	Average Score at Annual Qualifications During 1974-1981 when in Gunner Crew Position	See QAVG:TC
QAVG:TCG	Average Score at Annual Qualifications During 1974-1981 when in Either Tank Commander or Gunner Crew Position	See QAVG:TC
MRQ:TC	Score at Most Recent (1981) Annual Qualification when in TC Crew Position	See QAVG:TC
MRQ:G	Score at Most Recent (1981) Annual Qualification when in Gunner Crew Position	See QAVG:TC
MRQ:TCG	Score at Most Recent (1981) Annual Qualification when in Either Tank Commander or Gunner Crew Position	See QAVG:TC
COMPUTER PANEL		
ECD:CORR	Number Correct on Enter/Check Data (Maximum = 10)	
ECD:TIME	Average Time (seconds) to Complete Enter/Check Data Trial	

GLOSSARY OF BIOGRAPHIC AND DEPENDENT VARIABLES (continued)

Name	Description
CST:CORR	Number Correct on Self-Test (maximum = 10)
CST:TIME	Average Time (seconds) to Complete the Self-Test Trial
AVG:CORR	Number Correct Averaged Across Two Tasks
AVG:TIME	Completion Time Averaged Across Two Tasks
COMPUTER TRACKING	
EASY:TOT	Time on Target (sec) for Easy Tracking Task
EASY:ERROR	RMS error (number pixels) for Easy Tracking Task
MOD:TOT	Time on Target (sec) for Moderate Tracking Task
MOD:ERROR	RMS Error (number pixels) for Moderate Tracking Task
HARD:TOT	Time on Target (sec) for Hard Tracking Task
HARD:ERROR	RMS Error (number pixels) for Hard Tracking Task
AVG:TOT	Average Time on Target (sec)
AVG:ERROR	Average RMS Error (number pixels)
COMPUTER TARGET ENGAGEMENT	
3X:TIME	Average Time (sec) in 3X Segment
L1:TIME	Average Time (sec) in Laser 1 Segment

GLOSSARY OF BIOGRAPHIC AND DEPENDENT VARIABLES (continued)

Name	Description
L2:TIME	Average Time (sec) in Laser 2 Segment
F:TIME	Average Time (sec) in Fire Segment
10X:TIME	Average Total Time (sec) in 10X Segment
TOT:TIME (AVG)	Average Time (sec) from Beginning to End of Trial
TOT:TIME (MDN)	Median Time (sec) from Beginning to End of Trial
TANK COMMANDER DECISION MAKING	
D:CORR	Number of Correct Decisions
D:TIME	Time to Reach a Decision
HANDS-ON GUN LAYING	
GL:ERROR	Distance Between Actual Gun Lay and Target
GL:TIME	Time from Appearance of Target to Completed Gun Lay
HANDS-ON TRACKING	
TOT:HITS	Number Hits Averaged Across the TC and Gunner Station
TOT:DIST	Distance (inches) Tracked Averaged Across the TC and Gunner Station
TC:HITS	Number Hits at the TC Station
TC:DIST	Distance (inches) Tracked at the TC Station

GLOSSARY OF BIOGRAPHIC AND DEPENDENT VARIABLES (continued)

Name	Description
G:HITS	Number Hits at the Gunner Station
G:DIST	Distance (inches) Tracked at the Gunner Station
HANDS-ON TARGET ENGAGEMENT	
TOT:HITS	Total Number of Hits in 15 Trials
TOT:TIME	Average Total Time (sec) from Onset of a Trial to Press of the Gunner's Trigger
TC:TIME	Average Time (sec) from Onset of a Trial to Point at which TC Removes Hands from TC Power Handle
G:TIME	Average Time (sec) from Point at which TC Removes Hands from TC Power Handle to Press of Gunner's Trigger

TABLE D-1. ZERO-ORDER CORRELATIONS BETWEEN MEASURES OF PERFORMANCE ON COMPUTER TRACKING JOB SAMPLES FOR TANK COMMANDERS (TC), GUNNERS(G), AND COMBINED (TCG) SUBSAMPLES

		Computer Tracking							
Computer Panel		EASY: TOT	EASY: ERROR	MOD: TOT	MOD: ERROR	HARD: TOT	HARD: ERROR	AVG: TOT	AVG: ERROR
ECD:CORR	TC	.261	-.034	.192	-.251	.352	-.420	.346	-.322
	G	.064	.022	.097	.209	-.038	-.162	.070	.014
	TCG	.189	-.010	.149	-.098	.177	-.322*	.225	-.217
ECD:TIME	TC	.221	-.340	-.008	-.109	.100	.160	.098	-.108
	G	.064	.313	.138	.026	.125	-.061	.042	.168
	TCG	.114	.003	.078	-.030	.046	.024	.061	.037
CST:CORR	TC	-.029	.201	.036	-.125	.136	-.210	-.121	-.101
	G	-.047	.005	-.011	.058	-.008	-.124	.043	-.050
	TCG	-.027	.116	.017	-.054	.051	-.161	-.064	-.078
CST:TIME	TC	-.185	-.071	-.059	.224	-.144	.372	-.115	.238
	G	-.021	.066	-.130	-.029	-.172	.250	-.144	.133
	TCG	-.110	-.009	-.108	.114	-.169	.305*	-.140	.188
AVG:CORR	TC	.136	.095	.133	-.218	.316	-.400	.186	-.278
	G	.001	.018	.050	.173	-.030	-.198	.008	-.032
	TCG	.094	.070	.099	-.093	.151	-.319*	.109	-.195
AVG:TIME	TC	-.017	-.221	-.045	.100	-.147	.333	-.029	.108
	G	.024	.219	-.002	-.004	-.039	.123	-.067	.175
	TCG	-.009	-.004	-.028	-.058	-.084	.209	-.058	.141

* $p \leq .05$

NOTE: Boxed-in area indicates relationships among primary variables.

TABLE D-2. ZERO-ORDER CORRELATIONS BETWEEN MEASURES OF PERFORMANCE ON COMPUTER PANEL AND COMPUTER TARGET ENGAGEMENT JOB SAMPLES FOR TANK COMMANDERS (TC), GUNNERS (G), AND COMBINED (TCG) SUBSAMPLES

		Computer Target Engagement																
Computer Panel		PROC: ERROR	3X: ERROR (AVG)	3X: ERROR (MDN)	L1: ERROR (AVG)	L1: ERROR (MDN)	L2: ERROR (AVG)	L2: ERROR (MDN)	F: ERROR (AVG)	F: ERROR (MDN)	10X: ERROR (AVG)	10X: ERROR (MDN)	3X: TIME	L1: TIME	L2: TIME	F: TIME	10X: TIME	TOT: TIME (AVG)	TOT: TIME (MDN)
ECD:CORR	TC	-.361	.034	.091	-.212	-.476*	-.435*	-.534**	-.118	-.369	-.303	-.603**	-.054	.239	.393	-.024	.262	.117	.063
	G	-.173	-.158	-.177	.037	.130	-.124	-.117	.022	.188	-.045	-.013	.110	.090	-.066	-.163	.043	.081	.051
	TCG	-.280*	-.052	-.034	-.062	-.097	-.209	-.303	-.029	-.063	-.123	-.232	.019	.141	.231	-.098	.126	.082	.045
ECD:TIME	TC	-.094	.082	.014	-.118	.093	-.248	-.479*	-.202	.081	-.230	-.329	-.091	.172	.131	-.283	.101	.004	.093
	G	-.064	.167	.160	-.128	.017	-.207	-.164	-.191	-.159	-.131	-.133	.085	.160	.128	-.115	.134	.118	.101
	TCG	-.052	.128	.107	-.134	.023	-.230	-.264*	-.201	-.076	-.208	-.136	.015	.176	.129	-.154	.137	.086	.105
CST:CORR	TC	-.152	-.218	-.282	-.020	-.364	.004	-.215	.068	-.201	.016	-.265	.386	.376	.199	.217	.457*	.482*	.491*
	G	-.137	-.335*	-.199	.046	.124	.140	.226	.103	.105	.111	.205	-.013	-.090	.111	.106	-.054	-.037	-.015
	TCG	-.156	-.273*	-.244	.029	-.026	.097	.061	.096	.023	.083	.042	.178	.102	.150	.139	.155	.185	.200
CST:TIME	TC	.221	.130	.161	.026	.346	.132	.217	-.022	.342	.061	.283	-.162	-.061	.351	-.151	-.146	-.177	-.154
	G	.204	.231	.135	.066	-.091	.174	.135	-.008	-.068	.179	.063	.285	.345*	-.047	.058	.346*	.341*	.307
	TCG	.224	.180	.153	.038	.029	.147	.153	-.024	.031	.074	.120	.083	.186	-.175	-.029	.150	.131	.122
AVG:CORR	TC	-.298	-.104	-.108	-.135	-.486*	-.212	-.472*	-.030	-.330	-.169	-.504**	.190	.355	.344	.110	.415*	.344	.317
	G	-.215	-.371*	-.267	.059	.178	.037	.111	.096	.199	.062	.157	.056	-.018	.049	-.014	-.018	.020	.019
	TCG	-.268*	-.210	-.181	-.018	-.069	-.060	-.139	.051	.014	-.019	-.169	.129	.151	.235	.034	.176	.171	.159
AVG:TIME	TC	.106	.131	.118	-.042	.286	-.054	-.095	-.118	.278	-.074	.010	.168	.044	-.142	-.247	-.051	-.120	-.060
	G	.090	.238	.175	-.032	-.047	-.010	-.009	-.114	-.114	-.047	-.038	.225	.305	.044	-.030	.291*	.279	.24*
	TCG	.117	.186	.157	-.049	.031	-.030	-.045	-.125	-.022	-.065	-.029	.062	.261	-.043	-.102	.172	.132	.136

* $p \leq .05$
** $p \leq .01$

NOTE: Boxed-in areas indicate relationships among primary variables.

TABLE D-3. ZERO-ORDER CORRELATIONS BETWEEN MEASURES OF PERFORMANCE ON COMPUTER TRACKING AND COMPUTER TARGET ENGAGEMENT JOB SAMPLES FOR TANK COMMANDERS (TC), GUNNERS (G), AND COMBINED (TCG) SUBSAMPLES

Computer Target Engagement

Computer Tracking		PROC: ERROR	3X: ERROR (AVG)	3X: ERROR (MDN)	L1: ERROR (AVG)	L1: ERROR (MDN)	L2: ERROR (AVG)	L2: ERROR (MDN)	F: ERROR (AVG)	F: ERROR (MDN)
EASY:TOT	TC	-.003	-.061	.081	-.088	.052	-.287	-.18[illegible]	-.092	.105
	G	.061	.007	.073	-.030	.036	-.034	-.140	-.029	.050
	TCG	.025	-.001	.071	-.023	.055	-.089	-.141	-.023	.085
EASY:ERROR	TC	-.075	.024	.031	102	.046	.141	.231	.063	.029
	G	-.094	.046	-.122	.146	-.030	.150	.089	.141	-.055
	TCG	-.088	.041	064	.133	-.004	.146	.131	.112	-.026
MOD:TOT	TC	-.171	.215	.269	.006	.082	-.144	-.025	-.032	.186
	G	-.088	.117	.194	-.072	-.096	-.089	-.193	-.078	-.092
	TCG	-.124	.155	.218*	-.039	-.038	-.094	-.113	-.054	-.003
MOD:ERROR	TC	.071	-.233	-.199	.018	-.118	.048	-.080	.063	-.131
	G	.096	-.041	-.212	.046	.006	.013	.039	030	-.003
	TCG	.088	-.101	-.206	.035	-.027	.019	.003	.071	-.035
HARD:TOT	TC	-.201	.015	.210	-.110	-.049	-.148	-.055	-.068	.081
	G	-.182	-.104	-.002	-.06[illegible]	-.137	-.035	-.268	-.098	-.158
	TCG	-.196	-.016	.068	-.055	-.089	-.054	-.172	-.063	-.048
HARD:ERROR	TC	.220	-.122	-.215	-.044	-.039	.157	.057	-.066	-.088
	G	.058	.085	-.135	.068	-.045	.108	.214	.071	-.033
	TCG	.134	-.009	-.150	.007	-.061	.101	.135	-.090	-.090
AVG:TOT	TC	-.191	.238	.276	-.111	.003	-.285	-.131	-.106	.096
	G	-.025	-.023	.076	-.013	.041	-.040	-.224	-.031	.028
	TCG	-.038	.077	.140	-.024	.040	-.102	-.178	-.031	.073
AVG:ERROR	TC	.154	-.221	-.202	.017	-.029	.169	.084	.025	-.082
	G	-.003	.048	-.161	.124	.002	.139	.183	.136	.001
	TCG	.060	-.045	-.165	.078	-.014	.133	.140	.087	-.043

Computer Tracking		10X: ERROR (AVG)	10X: ERROR (MDN)	3X: TIME	L1: TIME	L2: TIME	F: TIME	[illegible] TIME	10X: TIME (AVG)	10X: TIME (MDN)
EASY:TOT	TC	-.184	-.110	-.226	.022	-.172	-.16[illegible]	[illegible]	[illegible]	[illegible]
	G	-.033	-.077	-.327*	-.144	.074	[illegible]	[illegible]	-.247	[illegible]
	TCG	-.053	-.069	-.260*	-.078	-.024	[illegible]	[illegible]	[illegible]	[illegible]
EASY:ERROR	TC	.114	.173	.116	.181	.160	.31[illegible]	[illegible]	[illegible]	[illegible]
	G	.153	.042	.307*	.011	.127	[illegible]	.055	[illegible]	[illegible]
	TCG	.141	.084	.241*	.076	.108	[illegible]	.174	[illegible]	[illegible]
MOD:TOT	TC	-.073	.029	-.189	-.009	.037	-.108	[illegible]	[illegible]	[illegible]
	G	-.084	-.171	-.279*	-.083	.035	-.129	[illegible]	[illegible]	[illegible]
	TCG	-.079	-.012	-.235*	-.059	.034	-.121	-.078	[illegible]	[illegible]
MOD:ERROR	TC	.046	-.105	.474**	.006	-.173	[illegible]	[illegible]	[illegible]	[illegible]
	G	.044	.027	.324*	-.042	[illegible]	.144	[illegible]	[illegible]	[illegible]
	TCG	.041	-.011	.362***	-.076	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
HARD:TOT	TC	-.121	-.037	-.211	[illegible]	-.143	[illegible]	[illegible]	[illegible]	[illegible]
	G	-.066	-.266*	-.30[illegible]*	[illegible]	.144	[illegible]	[illegible]	[illegible]	[illegible]
	TCG	.060	-.157	-.247*	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
HARD:ERROR	TC	.037	.020	.161	[illegible]	[illegible]	[illegible]	-.144	[illegible]	[illegible]
	G	.089	.142	.32[illegible]*	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	TCG	.045	.072	[illegible]*	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
AVG:TOT	TC	-.194	[illegible]	[illegible]	-.04[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	G	-.030	-.152	[illegible]**	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]*	[illegible]
	TCG	-.061	[illegible]	[illegible]**	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]*	[illegible]
AVG:ERROR	TC	.088	.045	.220	-.046	-.044	[illegible]	[illegible]	[illegible]	[illegible]
	G	.140	.137	[illegible]*	[illegible]	.021	.144	[illegible]	[illegible]	[illegible]
	TCG	108	.042	[illegible]*	-.008	-.010	[illegible]	[illegible]	[illegible]	[illegible]

* p ≤ .05
** p ≤ .01
***p ≤ .001

NOTE: Boxed-in areas indicate relationships among primary variables.

TABLE D-4. ZERO-ORDER CORRELATIONS BETWEEN MEASURES OF PERFORMANCE ON TC DECISION MAKING AND HANDS-ON GUN LAYING JOB SAMPLES FOR TANK COMMANDERS (TC), GUNNERS (G), AND COMBINED (TCG) SUBSAMPLES

TC Decison Making		Hands-On Gun Laying	
		GL: TIME	GL: ERROR
D:CORR	TC	-.053	.055
	G	.276	-.118
	TCG	.156	-.043
D:TIME	TC	.379*	-.010
	G	.180	.184
	TCG	.254*	.119

* $p \leq .05$

TABLE D-5. ZERO-ORDER CORRELATIONS BETWEEN MEASURES OF PERFORMANCE ON TC DECISION MAKING AND HANDS-ON TRACKING JOB SAMPLES FOR TANK COMMANDERS (TC), GUNNERS(G), AND COMBINED (TCG) SUBSAMPLES

TC Decision Making		Hands-On Tracking TOT: HITS	TOT: DIST	TC: HITS	TC: DIST	G: HITS	G: DIST
D:CORR	TC	.101	-.428*	.066	-.402*	.122	-.423*
	G	.074	-.066	.082	-.068	.052	-.060
	TCG	.083	-.210	.071	-.198	.081	.209
D:TIME	TC	.071	-.001	.068	.010	.051	-.011
	G	.112	-.377**	.136	-.367**	.061	-.365**
	TCG	.085	-.263*	.087	-.255*	.060	-.254*

* $p \leq .05$
** $p \leq .01$

NOTE: Boxed-in area indicates relationships among primary variables.

TABLE D-6. ZERO-ORDER CORRELATIONS BETWEEN MEASURES OF PERFORMANCE ON TC DECISION MAKING AND HANDS-ON TARGET ENGAGEMENT JOB SAMPLES FOR TANK COMMANDERS (TC), GUNNERS (G), AND COMBINED (TCG) SUBSAMPLES

TC Decision Making		Hands-On Target Engagement			
		TOT: HITS	TOT: TIME	TC: TIME	G: TIME
D:CORR	TC	-.293	.047	-.079	.278
	G	-.085	.126	.054	.214
	TCG	-.140	.094	.004	.241*
D:TIME	TC	.167	.125	.004	.306
	G	.005	.125	.026	.278
	TCG	.051	.134	.031	.284**

* $p \leq .05$
** $p \leq .01$

NOTE: Boxed-in areas indicate relationships among primary variables.

TABLE D-7. ZERO-ORDER CORRELATIONS BETWEEN MEASURES OF PERFORMANCE ON HANDS-ON TRACKING JOB SAMPLES FOR TANK COMMANDERS (TC), GUNNERS(G), AND COMBINED (TCG) SUBSAMPLES

Hands-On Gun Laying		Hands-On Tracking TOT: HITS	TOT: DIST	TC: HITS	TC: DIST	G: HITS	G: DIST
GL:TIME	TC	.033	-.102	.002	-.068	.072	-.126
	G	-.137	-.219	-.108	-.249	-.160	-.181
	TCG	-.102	-.241*	-.120	-.247*	-.051	-.223*
GL:ERROR	TC	-.482**	.053	-.429*	.054	-.396*	.049
	G	-.422**	-.022	-.355*	-.006	-.460**	-.036
	TCB	-.450***	-.007	-.393***	.003	-.427***	-.016

* $p \leq .05$
** $p \leq .01$

NOTE: Boxed-in area indicates relationships among primary variables.

TABLE D-8. ZERO-ORDER CORRELATIONS BETWEEN MEASURES OF PERFORMANCE ON HANDS-ON GUN LAYING AND HANDS-ON TARGET ENGAGEMENT JOB SAMPLES FOR TANK COMMANDERS (TC), GUNNERS (G), AND COMBINED (TCG) SUBSAMPLES

Hands-On Gun Laying		Hands-On Target Engagement TOT: HITS	TOT: TIME	TC: TIME	G: TIME
GL:TIME	TC	.161	.326	.203	.414*
	G	-.044	.246	.163	.273
	TCG	-.005	.286**	.203	.298**
GL:ERROR	TC	-.461**	-.081	-.125	.047
	G	-.305	.074	.078	.011
	TCG	-.269*	.020	.011	.026

* $p \leq .05$
** $p \leq .01$

NOTE: Boxed-in areas indicate relationships among primary variables.

TABLE D-9. ZERO-ORDER CORRELATIONS BETWEEN MEASURES OF PERFORMANCE ON HANDS-ON TRACKING AND HANDS-ON TARGET ENGAGEMENT JOB SAMPLES FOR TANK COMMANDERS (TC), GUNNERS (G), AND COMBINED (TCG) SUBSAMPLES

		Hands-On Target Engagement			
Hands-On Tracking		TOT: HITS	TOT: TIME	TC: TIME	G: TIME
TOT:HITS	TC	.205	.035	.115	-.140
	G	-.280	.038	.018	.062
	TCG	-.214	.027	.042	-.022
TOT:DIST	TC	-.216	-.191	-.144	-.193
	G	.266	-.194	-.071	-.359*
	TCG	.153	-.210	-.120	-.283**
TC:HITS	TC	.222	-.018	.068	-.180
	G	-.268	.107	.062	.147
	TCG	-.203	.035	.041	-.001
TC:DIST	TC	-.258	-.169	-.134	-.158
	G	.248	-.184	-.067	-.339*
	TCG	.143	-.195	-.113	-.260*
G:HITS	TC	.096	.107	.148	-.028
	G	-.251	-.064	-.045	-.064
	TCG	-.173	.010	.033	-.049
G:DIST	TC	-.164	-.198	-.144	-.211
	G	.268	-.196	-.071	-.363**
	TCG	.155	-.213	-.121	-.291**

* $p \leq .05$
** $p \leq .01$
*** $p \leq .001$

NOTE: Boxed-in areas indicate relationships among primary variables.

TABLE D-10. ZERO-ORDER CORRELATIONS BETWEEN MEASURES OF PERFORMANCE ON COMPUTER PANEL AND TC DECISION MAKING JOB SAMPLES FOR TANK COMMANDERS (TC), GUNNERS (G), AND COMBINED (TCG) SUBSAMPLES

Computer Panel		TC Decision Making D: CORR	D: TIME
ECD:CORR	TC	-.079	-.036
	G	.115	-.100
	TCG	.010	-.072
ECD:TIME	TC	.108	-.369
	G	-.051	.274
	TCG	.009	.038
CST:CORR	TC	-.110	.148
	G	.111	-.147
	TCG	.007	-.019
CST:TIME	TC	-.042	-.068
	G	.161	.478**
	TCG	.064	.246*
AVG:CORR	TC	-.109	.062
	G	.154	-.173
	TCG	.011	-.055
AVG:TIME	TC	.026	-.234
	G	.070	.450**
	TCG	.046	.179

* $p \leq .05$
** $p \leq .01$

NOTE: Boxed-in area indicates relationships among primary variables.

TABLE D-11. ZERO-ORDER CORRELATIONS BETWEEN MEASURES OF PERFORMANCE ON COMPUTER PANEL AND HANDS-ON GUN LAYING JOB SAMPLES FOR TANK COMMANDERS (TC), GUNNERS (G), AND COMBINED (TCG) SUBSAMPLES

Computer Panel		Hands-On Gun Laying GL: TIME	GL: ERROR
ECD:CORR	TC	-.358	-.013
	G	.075	-.267
	TCG	-.060	-.124
ECD:TIME	TC	-.595***	.470*
	G	.124	.040
	TCG	-.108	.202
CST:CORR	TC	.054	.049
	G	.052	-.251
	TCG	.080	-.107
CST:TIME	TC	-.222	.238
	G	.102	.261
	TCG	-.036	.248*
AVG:CORR	TC	-.180	.020
	G	.085	-.354*
	TCG	.016	-.143
AVG:TIME	TC	-.455*	.403*
	G	.134	.183
	TCG	-.083	.270*

*$p \leq .05$
***$p \leq .001$

NOTE: Boxed-in area indicates relationships among primary variables.

TABLE D-12. ZERO-ORDER CORRELATIONS BETWEEN MEASURES OF PERFORMANCE ON COMPUTER PANEL AND HANDS-ON TRACKING JOB SAMPLES FOR TANK COMMANDERS (TC), GUNNERS(G), AND COMBINED (TCG) SUBSAMPLES

Computer Panel		Hands-on Tracking TOT: HITS	TOT: DIST	TC: HITS	TC: DIST	G: HITS	G: DIST
ECD:CORR	TC	.243	.040	.291	.052	.069	.028
	G	.034	.084	.039	.078	.023	.087
	TCG	.132	.039	.156	.043	.057	.033
ECD:TIME	TC	-.015	-.020	-.038	-.029	.028	-.011
	G	-.324*	-.034	-.286	-.089	-.325*	.019
	TCG	-.192	-.014	-.153	-.055	-.192	.023
CST:CORR	TC	.056	.263	.053	.220	.038	.277
	G	.067	-.218	-.019	-.223	.171	-.205
	TCG	.052	-.030	-.002	-.053	.115	-.007
CST:TIME	TC	-.140	-.099	-.154	-.134	-.061	-.062
	G	-.186	.029	-.127	-.014	-.235	-.067
	TCG	-.156	-.007	-.119	-.047	-.163	.028
AVG:CORR	TC	.175	.174	.202	.156	.063	.175
	G	.072	-.118	.008	-.126	.146	-.106
	TCG	.111	.004	.091	-.009	.108	.015
AVG:TIME	TC	-.104	-.079	-.126	-.108	-.028	-.048
	G	.300	-.002	-.242	-.060	-.331*	.052
	TCG	-.205	-.012	-.160	-.060	-.210	.031

* $p \leq .05$

NOTE: Boxed-in area indicates relationships among primary variables.

TABLE D-13. ZERO-ORDER CORRELATIONS BETWEEN MEASURES OF PERFORMANCE ON COMPUTER PANEL AND HANDS-ON TARGET ENGAGEMENT JOB SAMPLES FOR TANK COMMANDERS (TC), GUNNERS (G), AND COMBINED (TCG) SUBSAMPLES

		Hands-On Target Engagement			
Computer Panel		TOT: HITS	TOT: TIME	TC: TIME	G: TIME
ECD:CORR	TC	.166	-.230	-.187	-.431*
	G	.129	-.082	-.084	-.012
	TCG	.147	-.205	-.135	-.226
ECD:TIME	TC	-.025	-.311	-.188	-.461*
	G	-.184	.038	-.023	.136
	TCG	-.112	-.110	-.089	-.085
CST:CORR	TC	.041	.235	.320	-.069
	G	-.248	-.062	-.191	.262
	TCG	-.114	.091	.056	.109
CST:TIME	TC	.034	.097	.022	.229
	G	-.161	-.050	.026	-.170
	TCG	-.074	.021	.023	.003
AVG:CORR	TC	.120	-.042	.073	-.293
	G	-.113	-.096	-.195	.192
	TCG	.012	-.063	-.044	-.063
AVG:TIME	TC	.009	-.091	-.081	-.076
	G	-.204	-.009	.003	-.027
	TCG	-.111	-.047	-.034	-.045

* $p \leq .05$

NOTE: Boxed-in areas indicate relationships among primary variables.

TABLE D-14. ZERO-ORDER CORRELATIONS BETWEEN MEASURES OF PERFORMANCE ON COMPUTER TRACKING AND TC DECISION MAKING JOB SAMPLES FOR TANK COMMANDERS (TC), GUNNERS (G), AND COMBINED (TCG) SUBSAMPLES

Computer Tracking		TC Decision Making D: CORR	D: TIME
EASY:TOT	TC	-.030	-.316
	G	.203	-.052
	TCG	.116	-.122
EASY:ERROR	TC	-.130	.205
	G	-.009	.235
	TCG	-.056	.224*
MOD:TOT	TC	-.098	-.072
	G	.018	.012
	TCG	-.023	-.008
MOD:ERROR	TC	-.185	.146
	G	-.019	.195
	TCG	-.079	.178
HARD:TOT	TC	-.165	-.060
	G	.095	-.237
	TCG	.005	-.153
HARD:ERROR	TC	.024	-.154
	G	.061	.165
	TCG	.017	.027
AVG:TOT	TC	-.060	-.190
	G	.031	-.087
	TCG	.013	-.101
AVG:ERROR	TC	-.060	.010
	G	.089	.190
	TCG	.014	.120

* $p \leq .05$

NOTE: Boxed-in area indicates relationships among primary variables.

TABLE D-15. ZERO-ORDER CORRELATIONS BETWEEN MEASURES OF PERFORMANCE ON COMPUTER TRACKING AND HANDS-ON GUN LAYING JOB SAMPLES FOR FOR TANK COMMANDERS (TC), GUNNERS (G), AND COMBINED (TCG) SUBSAMPLES

		Hands-On Gun Laying	
Computer Tracking		GL: TIME	GL: ERROR
EASY:TOT	TC	.004	-.213
	G	-.068	-.334*
	TCG	.026	-.268*
EASY:ERROR	TC	.160	.173
	G	.245	.062
	TCG	.189	.112
MOD:TOT	TC	.143	.147
	G	-.316*	-.200
	TCG	-.113	-.052
MOD:ERROR	TC	-.194	-.192
	G	.325*	.137
	TCG	.033	-.040
HARD:TOT	TC	-.055	-.189
	G	-.188	-.288
	TCG	-.072	-.231
HARD:ERROR	TC	-.146	.064
	G	.234	.459**
	TCG	-.069	.183
AVG:TOT	TC	-.010	-.079
	G	-.249	-.372*
	TCG	-.094	-.233
AVG:ERROR	TC	-.111	-.010
	G	.365*	.235
	TCG	.046	.085

* $p \leq .05$
** $p \leq .01$

NOTE: Boxed-in area indicates relationships among primary variables.

TABLE D-16. ZERO-ORDER CORRELATIONS BETWEEN MEASURES OF PERFORMANCE ON COMPUTER TRACKING AND HANDS-ON TRACKING JOB SAMPLES FOR TANK COMMANDERS (TC), GUNNERS (G), AND COMBINED (TCG) SUBSAMPLES

		Hands-On Tracking					
Computer Tracking		TOT: HITS	TOT: DIST	TC: HITS	TC: DIST	G: HITS	G: DIST
EASY:TOT	TC	.265	-.039	.371*	-.133	-.012	.047
	G	.261	-.135	.275	-.117	.202	-.145
	TCG	.244*	-.123	.282*	-.146	.124	-.094
EASY:ERROR	TC	-.145	.149	-.104	.232	-.154	.064
	G	-.164	-.197	-.196	-.192	-.095	-.191
	TCG	-.160	-.075	-.163	-.044	-.114	-.100
MOD:TOT	TC	-.038	.015	-.015	-.043	-.057	.063
	G	.200*	-.088	.290*	-.079	.224	-.091
	TCG	.157	-.060	.151	-.075	.124	-.043
MOD:ERROR	TC	.189	-.177	.123	-.153	.215	-.187
	G	-.281*	.044	-.350*	.077	-.144	.008
	TCG	-.121	-.027	-.164	.006	-.024	-.056
HARD:TOT	TC	.146	.145	.190	.061	.011	.214
	G	.185	-.046	.234	-.030	.091	-.059
	TCG	.150	.005	.183	-.020	.061	.028
HARD:ERROR	TC	-.120	-.124	-.223	-.091	.098	-.149
	G	-.440**	.221	-.479***	.237	-.324*	.189
	TCG	-.283*	.102	-.321**	.129	-.153	.070
AVG:TOT	TC	.127	.021	.221	-.053	-.080	.087
	G	.324*	-.120	.357*	-.104	.233	-.127
	TCG	.235	-.085	.272*	-.104	.119	-.062
AVG:ERROR	TC	-.083	.001	-.140	.030	.045	-.025
	G	-.333*	.066	-.393**	.088	-.202	.038
	TCG	-.239*	.059	-.276*	.084	-.122	.031

* $p \leq .05$
** $p \leq .01$
*** $p \leq .001$

NOTE: boxed-in area indicates relationships among primary variables.

TABLE D-17. ZERO-ORDER CORRELATIONS BETWEEN MEASURES OF PERFORMANCE ON COMPUTER TRACKING AND HANDS-ON TRACKING JOB SAMPLES FOR TANK COMMANDERS (TC), GUNNERS (G), AND COMBINED (TCG) SUBSAMPLES

		Hands-On Target Engagement			
Computer Tracking		TOT: HITS	TOT: TIME	TC: TIME	G: TIME
EASY:TOT	TC	-.238	-.367*	-.247	-.406*
	G	-.318*	-.199	-.207	-.035
	TCG	-.272*	-.232*	-.186	-.186
EASY:ERROR	TC	.431*	.169	.069	.271
	G	.478***	.322*	.257	.252
	TCG	.451***	.251*	.176	.259*
MOD:TOT	TC	-.236	-.142	-.044	-.252
	G	-.309*	-.320*	-.319*	-.095
	TCG	-.276*	-.236*	-.205	-.156
MOD:ERROR	TC	.156	-.028	-.003	-.061
	G	.623***	.388**	.380**	.131
	TCG	.495***	.157	.170	.025
HARD:TOT	TC	-.241	-.185	-.100	-.251
	G	-.105	-.362*	-.352*	-.023
	TCG	-.137	-.241	-.225	-.123
HARD:ERROR	TC	.121	.067	.022	.118
	G	.606***	.289	.279	.106
	TCB	.395**	.107	.082	.095
AVG:TOT	TC	-.288	-.291	-.177	-.357
	G	-.241	-.354*	-.356*	-.091
	TCG	-.242	-.301*	-.259*	-.203
AVG:ERROR	TC	.294	.005	-.052	.108
	G	.559***	.467**	.432**	.219
	TCG	.465***	.191	.157	.145

* $p \leq .05$
** $p \leq .01$
*** $p \leq .001$

NOTE: Boxed-in areas indicate relationships among primary variables.

TABLE D-18. ZERO-ORDER CORRELATIONS BETWEEN MEASURES OF PERFORMANCE ON COMPUTER TARGET ENGAGEMENT AND TC DECISION MAKING JOB SAMPLES FOR TANK COMMANDERS (TC), GUNNERS (G), AND COMBINED (TCG) SUBSAMPLES

Computer Tracking		TC Decision Making D: CORR	D: TIME
PROC:ERROR	TC	-.055	-.267
	G	-.138	.015
	TCG	-.111	-.085
3X:ERROR (AVG)	TC	.012	-.074
	G	-.068	.218
	TCG	-.031	.148
3X:ERROR (MDN)	TC	-.219	-.065
	G	-.156	.028
	TCG	-.182	-.005
L1:ERROR (AVG)	TC	-.321	-.038
	G	.161	.145
	TCG	.030	.118
L1:ERROR (MDN)	TC	-.192	-.081
	G	-.046	-.059
	TCG	-.077	-.051
L2:ERROR (AVG)	TC	-.211	.088
	G	.249	.047
	TCG	.120	.068
L2:ERROR (MDN)	TC	-.097	.178
	G	.153	-.017
	TCG	.074	.042
F:ERROR (AVG)	TC	-.303	-.056
	G	.134	.124
	TCG	.022	.099
F:ERROR (MDN)	TC	-.294	-.117
	G	.042	-.078
	TCG	-.034	-.065
10X:ERROR (AVG)	TC	-.287	.010
	G	.198	.102
	TCG	.068	.096

TABLE D-18. ZERO-ORDER CORRELATIONS BETWEEN MEASURES OF PERFORMANCE ON COMPUTER TARGET ENGAGEMENT AND TC DECISION MAKING JOB SAMPLES FOR TANK COMMANDERS (TC), GUNNERS (G), AND COMBINED (TCG) SUBSAMPLES (continued)

Computer Tracking		TC Decision Making D: CORR	TC Decision Making D: TIME
10X:ERROR (MDN)	TC	-.160	.097
	G	.102	-.040
	TCG	.029	.005
3X:TIME	TC	-.123	.404*
	G	.087	.259
	TCG	.026	.309**
L1:TIME	TC	-.290	.470**
	G	.075	.059
	TCG	-.064	.182
L2:TIME	TC	.360*	.199
	G	.047	-.012
	TCG	.161	.048
F:TIME	TC	-.088	-.073
	G	-.058	.278*
	TCG	-.064	.197
10X:TIME	TC	-.224	.465**
	G	.063	.145
	TCG	-.034	.231
TOT:TIME (AVG)	TC	-.210	.519**
	G	.079	.211
	TCG	-.007	.294**
TOT:TIME (MDN)	TC	-.205	.465**
	G	.090	.190
	TCG	-.001	.269*

* $p \leq .05$
** $p \leq .01$

NOTE: Boxed-in areas indicate relationships among primary variables.

TABLE D-19. ZERO-ORDER CORRELATIONS BETWEEN MEASURES OF PERFORMANCE ON COMPUTER TARGET ENGAGEMENT AND HANDS-ON GUN LAYING JOB SAMPLES FOR FOR TANK COMMANDERS (TC), GUNNERS (G), AND COMBINED (TCG) SUBSAMPLES

Computer Target Engagement		Hands-On Gun Laying GL: TIME	GL: ERROR
PROC:ERROR	TC	.030	-.004
	G	-.096	-.024
	TCG	-.088	-.021
3X:ERROR (AVG)	TC	.075	.452*
	G	-.234	.436**
	TCG	-.091	.440***
3X:ERROR (MDN)	TC	.053	.348
	G	.264	.292*
	TCG	-.157	.312**
L1:ERROR (AVG)	TC	.230	.268
	G	-.117	-.106
	TCG	.038	.015
L1:ERROR (MDN)	TC	.274	.386*
	G	-.173	-.107
	TCG	-.016	.042
L2:ERROR (AVG)	TC	.371*	.152
	G	-.050	.027
	TCG	.097	.068
L2:ERROR (MDN)	TC	.566***	.076
	G	.007	.075
	TCG	.181	.078
F:ERROR (AVG)	TC	.194	.246
	G	-.111	-.069
	TCG	.028	.030
F:ERROR (MDN)	TC	.173	.371*
	G	-.153	-.023
	TCG	-.003	.090
10X:ERROR (AVG)	TC	.296	.227
	G	-.091	-.041
	TCG	.063	.044

TABLE D-19. ZERO-ORDER CORRELATIONS BETWEEN MEASURES OF PERFORMANCE ON COMPUTER TARGET ENGAGEMENT AND HANDS-ON GUN LAYING JOB SAMPLES FOR FOR TANK COMMANDERS (TC), GUNNERS (G), AND COMBINED (TCG) SUBSAMPLES (continued)

Computer Target Engagement		Hands-On Gun Laying GL: TIME	GL: ERROR
10X:ERROR (MDN)	TC	.505**	.194
	G	-.065	.023
	TCG	.122	.082
3X:TIME	TC	.069	-.061
	G	.213	.104
	TCG	.197	.048
L1:TIME	TC	.054	.162
	G	.177	.180
	TCG	.131	.173
L2:TIME	TC	-.002	.211
	G	-.003	-.080
	TCG	-.015	.029
F:TIME	TC	.084	.074
	G	-.131	-.075
	TCG	-.080	-.027
10X:TIME	TC	.075	.186
	G	.101	.116
	TCG	.087	.139
TOT:TIME (AVG)	TC	.085	.084
	G	.160	.117
	TCG	.150	.107
TOT:TIME (MDN)	TC	.131	.090
	G	.200	.123
	TCG	.193	.114

* $p \leq .05$
** $p \leq .01$
*** $p \leq .001$

NOTE: Boxed-in areas indicate relationships among primary variables.

TABLE D-20. ZERO-ORDER CORRELATIONS BETWEEN MEASURES OF PERFORMANCE ON COMPUTER TARGET ENGAGEMENT AND HANDS-ON TRACKING JOB SAMPLES FOR TANK COMMANDERS (TC), GUNNERS(G), AND COMBINED (TCG) SUBSAMPLES

Computer Target Engagement		Hands-On Tracking					
		TOT: HITS	TOT: DIST	TC: HITS	TC: DIST	G: HITS	G: DIST
PROC:ERROR	TC	-.176	-.019	-.153	-.054	-.144	.014
	G	.007	.082	.019	.036	-.010	.123
	TCG	-.049	.065	-.030	.023	-.064	.101
3X:ERROR (AVG)	TC	.010	-.142	.089	-.047	-.123	-.218
	G	-.109	-.064	-.079	-.016	-.135	-.108
	TCG	.080	-.108	-.037	-.044	-.124	-.161
3X:ERROR (MDN)	TC	.037	.003	.125	.023	-.120	-.015
	G	-.131	.114	-.134	.171	-.108	.051
	TCG	-.065	.081	-.021	.125	-.114	.035
L1:ERROR (AVG)	TC	-.354	-.025	-.315	.065	-.277	-.104
	G	.191	-.012	.185	-.032	.170	.008
	TCG	.020	-.051	-.005	-.038	.053	-.059
L1:ERROR (MDN)	TC	-.373*	.098	-.357*	.142	-.250	.052
	G	.197	-.043	.123	-.046	.268	-.037
	TCG	.028	-.030	-.045	-.020	.130	-.037
L2:ERROR (AVG)	TC	-.303	-.124	-.362*	-.038	-.088	-.191
	G	.071	-.029	.035	-.042	.109	-.015
	TCG	-.045	-.081	-.108	-.065	.061	-.091
L2:ERROR (MDN)	TC	-.337	-.050	-.323	.015	-.224	-.104
	G	.067	-.042	.015	-.069	.129	-.014
	TCG	-.068	-.061	-.116	-.058	.022	-.060
F:ERROR (AVG)	TC	-.276	-.057	-.225	-.001	-.248	-.103
	G	.190	.007	.165	.001	.197	.012
	TCG	.046	-.045	.012	-.032	.084	-.055
F:ERROR (MDN)	TC	-.314	.146	-.315	.155	-.188	.128
	G	.228	-.044	.158	-.045	.290*	-.041
	TCG	.067	-.035	-.015	-.031	.171	-.036
10X:ERROR (AVG)	TC	-.330*	-.080	-.329*	.003	-.201	-.149
	G	.147	-.014	.122	-.027	.160	-.000
	TCG	.001	-.065	-.045	-.050	.069	-.075
10X:ERROR (MDN)	TC	-.378*	.006	-.364*	.064	-.248	-.046
	G	.136	-.047	.070	-.066	.206	-.026
	TCG	-.028	-.056	-.093	-.051	.077	-.057
3X:TIME	TC	.138	-.034	.077	-.061	.185	-.007
	G	-.371**	.134	-.341*	.049	-.356*	.211
	TCG	-.216	.045	-.209	-.016	-.169	.099

TABLE D-20. ZERO-ORDER CORRELATIONS BETWEEN MEASURES OF PERFORMANCE ON COMPUTER TARGET ENGAGEMENT AND HANDS-ON TRACKING JOB SAMPLES FOR TANK COMMANDERS (TC), GUNNERS(G), AND COMBINED (TCG) SUBSAMPLES (continued)

Computer Target Engagement		Hands-On Tracking					
		TOT: HITS	TOT: DIST	TC: HITS	TC: DIST	G: HITS	G: DIST
L1:TIME	TC	.156	.051	.200	.009	.024	.085
	G	-.393**	.207	-.363**	.139	-.375**	.262
	TCG	-.197	.144	-.140	.089	-.231*	.188
L2:TIME	TC	.377*	-.318	.346	-.267	.279	-.342
	G	-.279	.099	-.119	.128	-.235	.063
	TCT	.022	-.043	.068	-.003	-.054	-.078
F:TIME	TC	-.042	.024	-.048	-.018	-.016	.060
	G	-.155	.052	-.121	-.056	-.179	.154
	TCG	-.122	.041	-.094	-.046	-.131	.119
10X:TIME	TC	.193	.026	.231	-.019	.054	.065
	G	-.360**	.175	-.323*	.095	-.356**	.244*
	TCG	-.182	.121	-.124	.055	-.222*	.175
TOT:TIME (AVG)	TC	.199	-.002	.188	-.046	.136	.037
	G	-.389**	.169	-.353*	.078	-.380**	.243
	TCG	-.217	.094	-.180	.024	-.217	.153
TOT:TIME (MDN)	TC	.156	.032	.138	-.001	.123	.060
	G	-.294*	.071	-.279*	-.006	-.270	.143
	TCG	-.159	.038	-.144	-.021	-.140	.092

* $p \leq .05$
** $p \leq .01$

NOTE: Boxed-in areas indicate relationships among primary variables.

TABLE D-21. ZERO-ORDER CORRELATIONS BETWEEN MEASURES OF PERFORMANCE ON COMPUTER TARGET ENGAGEMENT AND HANDS-ON TARGET ENGAGEMENT JOB SAMPLES FOR TANK COMMANDERS (TC), GUNNERS (G), AND COMBINED (TCG) SUBSAMPLES

Computer Target Engagement		Hands-On Target Engagement			
		TOT: HITS	TOT: TIME	TC: TIME	G: TIME
PROC:ERROR	TC	-.147	.083	-.074	.335
	G	.042	.098	.211	-.252
	TCG	-.013	.076	.100	-.027
3X:ERROR (AVG)	TC	-.287	.007	-.056	.121
	G	-.210	-.024	-.018	-.021
	TCG	-.216	.005	-.008	.032
3X:ERROR (MDN)	TC	-.145	-.093	-.147	.055
	G	-.219	-.178	-.107	-.229
	TCG	-.197	-.149	-.120	-.120
L1:ERROR (AVG)	TC	.013	.091	.058	.106
	G	-.070	.108	.145	-.059
	TCG	-.039	.125	.146	-.003
L1:ERROR (MDN)	TC	-.162	-.071	-.160	.131
	G	-.190	-.114	-.022	-.260
	TCG	-.169	-.080	-.032	-.138
L2:ERROR (AVG)	TC	.096	.260	.186	.266
	G	-.094	.004	.047	-.106
	TCG	-.044	.089	.099	.007
L2:ERROR (MDN)	TC	-.040	.375*	.194	.520**
	G	-.148	.065	.137	-.160
	TCG	-.116	.169	.165	.070
F:ERROR (AVG)	TC	-.009	.107	.084	.095
	G	-.073	.125	.178	-.094
	TCG	.046	.141	.178	-.032
F:ERROR (MDN)	TC	-.185	-.050	-.099	.066
	G	-.192	-.031	.057	-.227
	TCG	-.169	-.005	.053	-.133
10X:ERROR (AVG)	TC	.043	.177	.127	.181
	G	-.085	.073	.119	-.043
	TCG	-.045	.120	.142	-.008

TABLE D-21. ZERO-ORDER CORRELATIONS BETWEEN MEASURES OF PERFORMANCE ON COMPUTER TARGET ENGAGEMENT AND HANDS-ON TARGET ENGAGEMENT JOB SAMPLES FOR TANK COMMANDERS (TC), GUNNERS (G), AND COMBINED (TCG) SUBSAMPLES (continued)

Computer Target Engagement		Hands-On Target Engagement			
		TOT: HITS	TOT: TIME	TC TIME	G TIME
10X:ERROR (MDN)	TC	-.088	.257	.098	.426**
	G	-.180	.013	.100	-.212
	TCG	-.149	.099	.118	-.008
3X:TIME	TC	-.041	-.041	.069	-.226
	G	.311*	.041	.084	-.094
	TCG	.226	.032	.097	-.136
L1:TIME	TC	.178	.192	.298	-.105
	G	.016	-.007	.047	-.135
	TCG	.060	.063	.127	-.123
L2:TIME	TC	-.037	-.171	-.142	-.137
	G	.056	-.008	-.002	-.016
	TCG	.040	-.067	-.050	-.062
F:TIME	TC	-.123	-.073	-.141	.091
	G	.308*	.054	.087	-.067
	TCG	.198	-.012	.022	-.017
10X:TIME	TC	.126	.145	.229	-.086
	G	.090	.006	.057	-.125
	TCG	.098	.050	.106	-.111
TOT:TIME (AVG)	TC	.055	.069	.183	-.180
	G	.212	.023	.074	-.118
	TCG	.178	.046	.112	-.134
TOT:TIME (MDN)	TC	-.106	.188	.325	-.164
	G	.084	.076	.143	-.141
	TCG	.043	.120	.203	-.144

* $p \leq .05$
** $p \leq .01$

NOTE: Boxed-in areas indicate relationships among primary variables.

APPENDIX E

TABLES OF RESULTS:
COMPARISONS WITH PAST SUCCESS AT ANNUAL QUALIFICATIONS

GLOSSARY OF BIOGRAPHIC AND DEPENDENT VARIABLES

BIOGRAPHIC VARIABLES

Name	Description	Code Levels
AGE	Age	
EDUC	Highest Level of Education Attained	1 = Attended High School 2 = High School Graduate 3 = Attended College 4 = College Graduate
RANK	Rank (Pay Grade)	1 = E1 2 = E2 3 = E3 4 = E4, SP4 5 = E5, SP5 6 = E6 7 = E7
ARMY:TIME	Number Months in Army	
A1:TIME	Number Months Served in M60A1	
A3:TIME	Number Months Served in M60A3	
CP:TIME	Number Months in Current Crew Position	
SC:MLAST	Number Months Since Last Subcaliber Fire	
VRT:MLAST	Number Months Since Last Vehicle Recognition Training	
CTT:MLAST	Number Months Since Last CTT Training	
CO	Combat Composite Score from ASVAB	
GT	General Technical Composite Score from ASVAB	

GLOSSARY OF BIOGRAPHIC AND DEPENDENT VARIABLES (continued)

Name	Description	Code Levels
GAME:FREQ	Frequency With Which Play Computer Games	1 = Once Per Month 2 = Once Per Week 3 = More Than Once a Week 4 = Every Day
QAVG:TC	Average Score at Annual Qualifications During 1974-1981 when in Tank Commander Crew Position	1 = Unqualified 2 = Qualified 3 = Distinguished
QAVG:G	Average Score at Annual Qualifications During 1974-1981 when in Gunner Crew Position	See QAVG:TC
QAVG:TCG	Average Score at Annual Qualifications During 1974-1981 when in Either Tank Commander or Gunner Crew Position	See QAVG:TC
MRQ:TC	Score at Most Recent (1981) Annual Qualification when in TC Crew Position	See QAVG:TC
MRQ:G	Score at Most Recent (1981) Annual Qualification when in Gunner Crew Position	See QAVG:TC
MRQ:TCG	Score at Most Recent (1981) Annual Qualification when in Either Tank Commander or Gunner Crew Position	See QAVG:TC
COMPUTER PANEL		
ECD:CORR	Number Correct on Enter/Check Data (Maximum = 10)	
ECD:TIME	Average Time (seconds) to Complete Enter/Check Data Trial	

GLOSSARY OF BIOGRAPHIC AND DEPENDENT VARIABLES (continued)

Name	Description
CST:CORR	Number Correct on Self-Test (maximum = 10)
CST:TIME	Average Time (seconds) to Complete the Self-Test Trial
AVG:CORR	Number Correct Averaged Across Two Tasks
AVG:TIME	Completion Time Averaged Across Two Tasks
COMPUTER TRACKING	
EASY:TOT	Time on Target (sec) for Easy Tracking Task
EASY:ERROR	RMS error (number pixels) for Easy Tracking Task
MOD:TOT	Time on Target (sec) for Moderate Tracking Task
MOD:ERROR	RMS Error (number pixels) for Moderate Tracking Task
HARD:TOT	Time on Target (sec) for Hard Tracking Task
HARD:ERROR	RMS Error (number pixels) for Hard Tracking Task
AVG:TOT	Average Time on Target (sec)
AVG:ERROR	Average RMS Error (number pixels)
COMPUTER TARGET ENGAGEMENT	
3X:TIME	Average Time (sec) in 3X Segment
L1:TIME	Average Time (sec) in Laser 1 Segment

GLOSSARY OF BIOGRAPHIC AND DEPENDENT VARIABLES (continued)

Name	Description
L2:TIME	Average Time (sec) in Laser 2 Segment
F:TIME	Average Time (sec) in Fire Segment
10X:TIME	Average Total Time (sec) in 10X Segment
TOT:TIME (AVG)	Average Time (sec) from Beginning to End of Trial
TOT:TIME (MDN)	Median Time (sec) from Beginning to End of Trial
TANK COMMANDER DECISION MAKING	
D:CORR	Number of Correct Decisions
D:TIME	Time to Reach a Decision
HANDS-ON GUN LAYING	
GL:ERROR	Distance Between Actual Gun Lay and Target
GL:TIME	Time from Appearance of Target to Completed Gun Lay
HANDS-ON TRACKING	
TOT:HITS	Number Hits Averaged Across the TC and Gunner Station
TOT:DIST	Distance (inches) Tracked Averaged Across the TC and Gunner Station
TC:HITS	Number Hits at the TC Station
TC:DIST	Distance (inches) Tracked at the TC Station

GLOSSARY OF BIOGRAPHIC AND DEPENDENT VARIABLES (continued)

Name	Description
G:HITS	Number Hits at the Gunner Station
G:DIST	Distance (inches) Tracked at the Gunner Station
HANDS-ON TARGET ENGAGEMENT	
TOT:HITS	Total Number of Hits in 15 Trials
TOT:TIME	Average Total Time (sec) from Onset of a Trial to Press of the Gunner's Trigger
TC:TIME	Average Time (sec) from Onset of a Trial to Point at which TC Removes Hands from TC Power Handle
G:TIME	Average Time (sec) from Point at which TC Removes Hands from TC Power Handle to Press of Gunner's Trigger

TABLE E-1. ZERO-ORDER CORRELATIONS BETWEEN BIOGRAPHICAL MEASURES (ARMY EXPERIENCE, TRAINING, TEST SCORES) AND MEASURES OF PAST SUCCESS AT ANNUAL QUALIFICATIONS (FROM BIOGRAPHICAL DATA) FOR TANK COMMANDERS (TC), GUNNERS(G), AND COMBINED (TCG) SUBSAMPLES

		Biographical Data										
Past Success at Annual Qual		RANK	ARMY: TIME	A1: TIME	A3: TIME	CP: TIME	SC: MLAST	VRT: MLAST	CTT: MLAST	CO	GT	GAME: FREQ
QAVG:TC	TC	-.171	-.345	-.170	.102	.017	.418*	.278	-.128	-.041	-.069	-.046
	G	.236	-.153	.197	---[1]	.187	-.137	-.157	-.454	-.559	-.459	.476
	TCG	.144	-.227	-.022	.142	.134	.348*	.206	-.128	-.185	-.057	.032
QAVG:G	TC	-.030	-.186	-.318	-.086	-.177	.357	-.093	.263	.176	.066	.338
	G	.053	.116	.172	-.072	.002	-.217	-.104	-.295	-.086	.097	.102
	TCG	.080	-.023	-.090	.018	-.075	.132	-.093	.129	.032	.102	-.238
QAVG:TCG	TC	.065	-.210	-.067	.028	.117	.394*	.017	.056	.138	-.115	.088
	G	-.036	-.036	.096	-.035	---	-.142	-.116	-.353	-.144	.007	.154
	TCG	.103	-.049	.075	.013	.158	.187	-.045	-.022	-.059	-.019	.135
MRQ:TC	TC	.201	.059	.101	.085	.278	.184	-.078	.361	.131	-.170	.184
	G	-.000	.016	.344	---	.285	.066	-.313	1.000	-.755	-.625	.535
	TCG	.291	.144	.232	.125	.343	.127	-.134	.305	-.133	-.167	.268
MRQ:G	TC	---	---	---	---	---	---	---	---	---	---	---
	G	-.058	-.163	-.033	-.060	-.211	-.095	.227	---	---	---	-.200
	TCG	-.087	-.167	-.048	-.052	-.190	-.116	.150	---	---	---	-.191
MRQ:TCG	TC	.215	.062	.101	.119	.279	.103	-.131	.089	.156	-.145	.191
	G	-.048	.088	.161	.026	.046	-.085	.005	-.090	-.303	-.279	-.000
	TCG	.262	.206	.251	.071	.304**	.106	-.043	.073	-.108	-.091	.141

* $p \leq .05$
** $p \leq .01$

[1] Impossible to compute correlation because (1) n=0 or (2) SD=0.

TABLE E-2. ZERO-ORDER CORRELATIONS BETWEEN PERFORMANCE MEASURES ON COMPUTER PANEL JOB SAMPLE AND MEASURES OF PAST SUCCESS AT ANNUAL QUALIFICATIONS (FROM BIOGRAPICAL DATA) FOR TANK COMMANDERS (TC), GUNNERS(G), AND COMBINED (TCG) SUBSAMPLES

		Computer Panel					
Past Success of Annual Qual		ECD: CORR	ECD: TIME	CST: CORR	CST: TIME	AVG: CORR	AVG: TIME
QAVG:TC	TC	-.147	-.175	-.159	-.040	-.174	-.116
	G	-.703	-.169	.354	.749	-.349	.330
	TCG	-.231	-.066	-.109	.091	-.200	.026
QAVG:G	TC	-.034	-.196	.236	-.415	.091	-.380
	G	-.178	-.089	.213	-.265	.038	-.216
	TCG	-.091	-.145	.216	-.350*	.067	-.306*
QAVG:TCG	TC	-.181	-.210	-.018	-.171	-.117	-.225
	G	-.247	.058	.221	-.073	.002	-.012
	TCG	-.213	-.053	.077	-.103	-.083	-.096
MRQ:TC	TC	.272	.004	.226	-.312	.292	-.210
	G	-.707	.325	.717	.889	-.000	.805
	TCG	.096	.121	.316	-.082	.229	.012
MRQ:G	TC	---[1]	---	---	---	---	---
	G	.139	.092	.079	-.092	.157	-.005
	TCG	.114	.068	.075	-.104	.140	-.026
MRQ:TCG	TC	.195	-.022	.201	-.319	.235	-.227
	G	-.148	.118	.267	.188	.095	.180
	TCG	.042	.089	.210	-.094	.154	-.012

* $p \leq .05$

[1]Impossible to compute correlation because: (1) n=0 or (2) SD=0.

TABLE E-3. ZERO-ORDER CORRELATIONS BETWEEN PERFORMANCE MEASURES ON COMPUTER TRACKING JOB SAMPLE AND MEASURES OF PAST SUCCESS AT ANNUAL QUALIFICATIONS (FROM BIOGRAPHICAL DATA) FOR TANK COMMANDERS (TC), GUNNERS(G), AND COMBINED (TCG) SUBSAMPLES

		Computer Tracking							
Past Success at Annual Qual		EASY: TOT	EASY: ERROR	MOD: TOT	MOD: ERROR	HARD: TOT	HARD: ERROR	AVG: TOT	AVG: ERROR
QAVG:TC	TC	.052	-.227	.042	-.348	.246	-.293	.225	-.379
	G	-.231	.753	-.589	-.123	-.679	.599	-.351	.552
	TCG	-.103	-.040	-.105	-.272	.012	-.087	-.012	-.132
QAVG:G	TC	.117	-.003	.017	-.328	.006	-.237	.027	-.166
	G	-.101	.035	.029	-.102	.042	-.179	-.069	-.095
	TCG	-.021	.012	.012	-.182	.017	-.190	-.033	-.114
QAVG:TCG	TC	-.091	-.112	-.030	-.264	.056	-.242	.005	-.245
	G	-.134	.183	-.105	-.073	-.166	-.078	-.180	.024
	TCG	-.160	.040	-.094	-.136	-.090	-.111	-.135	-.061
MRQ:TC	TC	.387	-.239	.143	-.172	.325	.326	.304	-.366
	G	-.343	.723	-.696	-.088	-.824	.579	-.528	.512
	TCG	.044	-.021	-.087	-.115	-.149	-.061	-.117	-.063
MRQ:G	TC	---[1]	---	---	---	---	---	---	---
	G	-.369	.665***	-.376	.384	-.260	.024	-.473	.566*
	TCG	-.352	.659***	-.372	.390	-.269	.045	-.444	.557*
MRQ:TCG	TC	.182	-.180	.048	-.094	.075	-.200	.068	-.215
	G	-.337	.574**	-.414*	.159	-.546*	.171	-.540*	.565**
	TCG	-.095	.089	-.172	.034	-.225	.031	-.231	.090

* p .05
** p .01
***p .001

[1]Impossible to compute correlation because (1) n=0 or (2) SD=0.

TABLE E-4. ZERO-ORDER CORRELATIONS BETWEEN PERFORMANCE MEASURES ON COMPUTER TARGET ENGAGEMENT 303 SAMPLE AND MEASURES OF PAST SUCCESS AT ANNUAL QUALIFICATIONS (FROM BIOGRAPHICAL DATA) FOR TANK COMMANDERS (TC), GUNNERS (G), AND COMBINED (TCG) SUBSAMPLES

		Computer Target Engagement																
Past Success at Annual Qual		PROC: ERROR	3X: ERROR (AVG)	3X: ERROR (MDN)	L1: ERROR (AVG)	L1: ERROR (MDN)	L2: ERROR (AVG)	L2: ERROR (MDN)	F: ERROR (AVG)	F: ERROR (MDN)	10X: ERROR (AVG)	10X: ERROR (MDN)	3X: TIME	L1: TIME	L2: TIME	F: TIME	10X: TIME	TOT: TIME: (AVG)	TOT: TIME: (MDN)
QAVG:TC	TC	.068	.272	.158	.145	.095	.202	.162	.110	.084	.169	.154	-.106	-.164	-.019	-.037	-.170	-.166	-.042
	G	.403	.754*	.595	-.203	-.094	.013	.030	-.253	.322	-.131	-.102	-.342	-.091	.119	.349	.064	-.195	.129
	TCG	.087	.374	.239	.068	.121	.180	.204	.025	.029	.111	.180	-.148	-.129	.004	.019	-.123	-.160	-.066
QAVG:G	TC	-.175	-.252	-.309	-.006	.145	.084	.055	.072	.127	.059	.096	.050	-.032	-.217	-.130	-.067	-.010	-.008
	G	.103	-.153	-.103	.438**	-.318	-.358*	-.439*	-.493**	.403*	-.449**	-.450**	-.128	-.032	-.089	.206	.010	-.056	.015
	TCG	.000	-.208	-.194	-.316*	-.168	-.194	-.230	-.284*	-.235	-.261	-.242	-.046	-.047	-.133	.187	-.008	-.030	-.004
QAVG:TCG	TC	.076	.037	-.052	.213	.164	.268	.197	.182	.142	.242	.203	.058	-.219	.014	.200	-.167	-.075	-.079
	G	.079	.013	.008	-.447**	-.198	-.287	-.326	-.446**	-.298	-.390*	-.325	-.099	.469	-.003	.357	.007	.138	-.003
	TCG	.106	-.007	-.022	-.207	-.105	-.114	-.139	-.233	-.193	-.182	-.157	-.043	-.103	-.027	.212	-.048	-.051	-.033
MRQ:TC	TC	.019	-.033	.071	.118	.003	-.039	-.123	.053	.050	.036	-.084	-.010	-.127	-.176	-.018	-.158	-.107	-.097
	G	.485	.663	.572	-.539	-.069	-.201	.086	-.599	-.353	-.452	-.078	-.148	-.034	-.044	.170	.560	-.047	.139
	TCG	.078	.132	.168	-.047	.036	-.075	-.027	-.125	-.042	-.086	-.021	-.037	-.011	-.137	.033	-.032	-.042	-.054
MRQ:G	TC	---[1]	---	---	---	---	---	---	---	---	---	---	---	--	---	---	---	---	---
	G	-.181	-.248	-.244	-.042	-.056	.026	-.091	-.048	-.093	-.013	-.096	.086	.033	-.044	-.073	.008	.044	.075
	TCG	-.174	-.247	-.250	-.013	-.038	.046	-.070	-.023	-.078	.011	-.073	.093	.000	-.040	-.076	-.018	.033	.059
MRQ:TCG	TC	.051	-.075	.014	.159	.028	.015	-.070	.097	.037	.086	-.041	.020	-.201	-.156	-.003	-.223	-.135	-.136
	G	.035	.061	.014	-.182	-.024	-.030	-.022	-.196	-.114	-.123	-.044	-.007	.119	-.025	.053	.111	.059	.079
	TCG	.094	-.044	.000	-.076	-.057	-.069	-.069	-.120	-.118	-.090	-.084	-.012	-.023	-.090	.061	-.029	-.024	-.027

* p ≤ .05
** p ≤ .01

[1] Impossible to compute correlation because (1) n=0 or (2) SD=0.

TABLE E-5. ZERO-ORDER CORRELATIONS BETWEEN PERFORMANCE MEASURES OF PAST SUCCESS AT ANNUAL QUALIFICATIONS (FROM BIOGRAPHICAL DATA) FOR TANK COMMANDERS (TC), GUNNERS (G), AND COMBINED (TCG) SUBSAMPLES

Past Success at Annual Qual		TC Decision Making D: CORR	D: TIME
QAVG:TC	TC	-.267	-.101
	G	-.738	.172
	TCG	-.328*	-.037
QAVG:G	TC	-.054	-.337
	G	-.071	-.057
	TCG	-.064	-.198
QAVG:TCG	TC	-.112	-.221
	G	-.132	.027
	TCG	-.128	-.100
MRQ:TC	TC	-.570**	-.235
	G	-.822*	.354
	TCG	-.541**	-.122
MRQ:G	TC	---[1]	---
	G	.253	-.087
	TCG	.248	-.077
MRQ:TCG	TC	-.488**	-.214
	G	-.159	.049
	TCG	-.327*	-.117

* $p \leq .05$
** $p \leq .01$

[1] Impossible to compute correlation because (1) n=0 or (2) SD=0

TABLE E-6. ZERO-ORDER CORRELATIONS BETWEEN PERFORMANCE MEASURES ON HANDS-ON GUN LAYING JOB SAMPLES AND MEASURES OF PAST SUCCESS AT ANNUAL QUALIFICATIONS (FROM BIOGRAPHICAL DATA) FOR TANK COMMANDERS (TC), GUNNERS (G), AND COMBINED (TCG) SUBSAMPLES

Past Success at Annual Qual		Hands-On Gun Laying GL: TIME	GL: ERROR
QAVG:TC	TC	.310	-.230
	G	-.084	.340
	TCG	.165	-.080
QAVG:G	TC	.314	-.073
	G	.248	-.164
	TCG	.215	-.120
QAVG:TCG	TC	.202	-.079
	G	.329	-.029
	TCG	.179	-.062
MRQ:TC	TC	.022	-.279
	G	-.121	.457
	TCG	-.076	-.043
MRQ:G	TC	---[1]	---
	G	.640	-.012
	TCG	.619***	.006
MRQ:TCG	TC	.074	-.222
	G	.304	.184
	TCG	.042	-.050

***p ≤ .001

[1]Impossible to compute correlation because (1) n=0 or (2) SD=0

TABLE E-7. ZERO-ORDER CORRELATIONS BETWEEN PERFORMANCE MEASURES ON HANDS-ON TRACKING JOB SAMPLE AND MEASURES OF PAST SUCCESS AT ANNUAL QUALIFICATIONS (FROM BIOGRAPHICAL DATA) FOR TANK COMMANDERS (TC), GUNNERS(G), AND COMBINED (TCG) SUBSAMPLES

Past Success at Annual Qual		Hands-On Tracking TOT: HITS	TOT: DIST	TC: HITS	TC: DIST	G: HITS	G: DIST
QAVG:TC	TC	-.038	.095	-.051	.163	-.013	.029
	G	-.564	-.491	-.567	-.400	-.275	-.563
	TCG	-.144	.086	-.152	.135	-.113	.038
QAVG:G	TC	-.259	.210	-.228	.147	-.202	.253
	G	.255	-.330	.199	-.320	.301	-.328
	TCG	-.021	-.041	-.028	-.075	-.001	-.008
QAVG:TCG	TC	-.214	.043	-.248	.065	-.085	.022
	G	.112	-.351	.063	-.353*	.175	-.338*
	TCG	-.050	-.122	-.073	-.121	.002	-.116
MRQ:TC	TC	-.004	.189	-.030	.232	.036	.138
	G	-.598	-.588	-.589	-.498	-.316	-.660
	TCG	-.146	.112	-.169	.150	-.090	.072
MRQ:G	TC	--[1]	--	--	--	--	--
	G	.233	-.268	.234	-.308	.197	-.222
	TCG	.194	-.268	.143	-.303	.181	-.226
MRQ:TCG	TC	-.071	.176	-.137	.222	.061	.121
	G	-.020	-.296	-.046	-.294	-.024	-.290
	TCG	-.040	.037	-.053	.051	-.007	.022

* $p \leq .05$

[1] Impossible to compute correlation because (1) n=0 or (2) SD=0

TABLE E-8. ZERO-ORDER CORRELATIONS BETWEEN PERFORMANCE MEASURES ON HANDS-ON TARGET ENGAGEMENT JOB SAMPLE (FROM BIOGRAPHICAL DATA) FOR TANK COMMANDERS (TC), GUNNERS (G), AND COMBINED (TCG) SUBSAMPLES

Past Success at Annual Qual		Hands-On Target Engagement TOT: HITS	TOT: TIME	TC: TIME	G: TIME
QAVG:TC	TC	-.129	.042	.033	.038
	G	-.531	-.673	-.561	-.517
	TCG	-.292	-.119	-.124	-.041
QAVG:G	TC	.006	-.004	.047	-.102
	G	-.125	.367*	.272	.398*
	TCG	-.080	.162	.146	.109
QAVG:TCG	TC	-.125	.047	.046	.026
	G	-.313	.284	.164	.371*
	TCG	-.235	.148	.093	.181
MRQ:TC	TC	.136	-.027	.080	-.225
	G	-.791	-.707	-.626	-.420
	TCG	-.466*	-.151	-.074	-.245
MRQ:G	TC	--[1]	--	--	--
	G	.100	.305	.189	.326
	TCG	.088	.300	.181	.332
MRQ:TCT	TC	.128	.010	.102	-.173
	G	-.625***	-.020	-.099	.164
	TCG	-.381**	.028	.057	-.049

* $p \leq .05$
** $p \leq .01$
*** $p \leq .001$

[1] Impossible to compute correlation because (1) n=0 or (2) SD=0

TABLE E-9. FORWARD STEPPED REGRESSION UNDER TWO STATISTICAL OPTIONS OF AVERAGE ANNUAL QUALIFICATION SCORE AT TC STATION (QAVG:TC) ON ARMY EXPERIENCE AND RESIDUALIZED MEASURES OF PERFORMANCE FOR SEVEN JOB SAMPLES

Step	Job Sample	Variable	Multiple R	R Square	R Square Change	Beta	F
		Pairwise Deletion of Missing Cases (Minimum n=29)					
1		RANK	.508	.258	.258	0.507	21.47**
		ARMY:TIME				-0.585	25.21**
		A1:TIME				0.117	0.69
		CP:TIME				0.398	8.11*
2	TCD	D:CORR	.641	.412	.154	-0.494	33.06**
3	CTE	3X:ERROR (AVG)	.747	.558	.146	0.592	40.10**
4	HGL	GL:TIME	.803	.644	.086	0.277	9.33**
5	CT	MOD:ERROR	.862	.743	.099	-0.494	18.99**
6	CT	MOD:TOT	.920	.847	.104	-0.459	19.92**
7	HGL	GL:ERROR	.955	.911	.064	-0.604	30.42**
		Listwise Deletion of Missing Cases (n=15)					
1		RANK	.611	.374	.374	0.992	421.27**
		ARMY:TIME				0.004	0.00
		A1:TIME				0.910	139.92**
		CP:TIME				-0.861	97.91**
2	HT	TC:DIST	.791	.626	.252	1.157	195.95**
3	HT	G:DIST	.942	.888	.262	-1.003	250.94**
4	CTE	PROC:ERROR	.968	.937	.049	0.344	78.36**
5	CP	CST:TIME	.991	.981	.044	-0.448	81.51**
6	CT	G:HITS	.996	.991	.010	-0.267	25.16**
7	CTE	3X:ERROR (AVG)	.999	.998	.007	-0.201	9.80

* $p \leq .05$
** $p \leq .01$

TABLE E-10. FORWARD STEPPED REGRESSION UNDER TWO STATISTICAL OPTIONS OF AVERAGE ANNUAL QUALIFICATION SCORE AT TC STATION (QAVG:TC) ON MEASURES OF PERFORMANCE FOR SEVEN JOB SAMPLES

Step	Job Sample	Variable	Multiple R	R Square	R Square Change	Beta	F
			Pairwise Deletion of Missing Cases (Minimum n=29)				
1	CTE	3X:ERROR (AVG)	.374	.140	.140	0.617	56.53**
2	TCD	D:CORR	.490	.240	.100	-0.493	43.62**
3	HGL	GL:ERROR	.566	.320	.080	-0.759	62.56**
4	HTE	TOT:HITS	.656	.430	.110	-0.482	27.58**
5	HT	TC:HITS	.763	.582	.152	-0.363	17.88**
6	CT	MOD:TOT	.826	.682	.100	-0.483	25.94**
7	CT	MOD:ERROR	.891	.793	.111	-0.612	25.28**
8	HGL	GL:TIME	.912	.831	.038	0.292	14.42**
9	CT	HARD:ERROR	.934	.873	.042	0.346	7.50*
10	HTE	TC:TIME	.953	.909	.036	-0.201	7.10*
			Listwise Deletion of Missing Cases (n=15)				
1	CTE	10X:ERROR (AVG)	.693	.480	.480	1.428	58.80**
2	CP	CST:TIME	.785	.617	.137	-0.174	2.33
3	CTE	10X:TIME	.840	.705	.088	-0.253	4.01
4	CP	CST:CORR	.864	.746	.041	0.342	9.17
5	CT	HARD:ERROR	.888	.789	.043	0.865	25.91**
6	CP	ECD:CORR	.928	.861	.072	0.711	17.69*
7	HGL	GL:ERROR	.953	.909	.048	-0.451	9.43
8	CT	FAST:TOT	.961	.924	.015	0.400	7.84
9	HTE	TC:TIME	.975	.950	.025	0.281	5.60
10	TCD	D:CORR	.987	.974	.023	0.251	3.54

* $p \leq .05$
** $p \leq .01$

TABLE E-11. FORWARD STEPPED REGRESSION UNDER TWO STATISTICAL OPTIONS OF AVERAGE ANNUAL QUALIFICATION SCORE AT GUNNER'S STATION (QAVG:G) ON ARMY EXPERIENCE AND RESIDUALIZED MEASURES OF PERFORMANCE FOR SEVEN JOB SAMPLES

Step	Job Sample	Variable	Multiple R	R Square	R Square Change	Beta	F
			Pairwise Deletion of Missing Cases (Minimum n=44)				
1		RANK	.175	.031	.031	0.230	1.52
		ARMY:TIME				0.009	0.00
		A1:TIME				-0.180	0.60
		CP:TIME				0.056	0.05
2	CP	CST:TIME	.392	.154	.123	-0.400	7.13*
3	CTE	10X:ERROR (AVG)	.474	.225	.071	-0.311	4.73
4	CP	ECD:CORR	.534	.285	.060	-0.229	2.05
5	HGL	GL:TIME	.577	.332	.047	0.224	2.22
6	CT	MOD:ERROR	.598	.358	.026	-0.195	1.71
7	CT	EASY:ERROR	.614	.377	.019	0.148	1.02
			Listwise Deletion of Missing Cases (n=29)				
1		RANK	.312	.097	.097	0.426	10.15**
		ARMY:TIME				-0.197	1.37
		A1:TIME				-0.516	8.42**
		CP:TIME				0.076	0.19
2	HTE	G:TIME	.565	.319	.221	0.758	32.22**
3	CTE	10X:ERROR (AVG)	.699	.489	.170	-0.438	14.72**
4	CP	CST:TIME	.796	.634	.145	-0.622	25.41**
5	CTE	3X:TIME	.872	.761	.127	0.430	15.09**
6	CP	ECD:TIME	.897	.804	.043	0.286	3.90
7	HTE	TC:TIME	.910	.828	.024	0.170	2.48

* $p \leq .05$
** $p \leq .01$

TABLE E-12. FORWARD STEPPED REGRESSION UNDER TWO STATISTICAL OPTIONS OF AVERAGE ANNUAL QUALIFICATION SCORE AT GUNNER'S STATION (QAVG:G) ON MEASURES OF PERFORMANCE FOR SEVEN JOB SAMPLES

Step	Job Sample	Variable	Multiple R	R Square	R Square Change	Beta	F
			Pairwise Deletion of Missing Cases (Minimum n=44)				
1	CP	CST:TIME	.350	.123	.123	-0.303	3.45
2	CP	ECD:CORR	.424	.179	.056	-0.321	3.99
3	CTE	10X:ERROR (AVG)	.498	.248	.069	-0.305	4.76
4	HGL	GL:TIME	.537	.288	.040	-0.161	1.18
5	CT	MOD:ERROR	.559	.313	.025	-0.131	0.34
6	HTE	TC:TIME	.579	.335	.022	0.094	0.41
7	TCD	D:TIME	.590	.348	.014	-0.210	1.73
8	CT	EASY:ERROR	.604	.365	.016	0.234	1.46
9	CT	HARD:ERROR	.612	.375	.011	-0.338	1.26
10	CT	HARD:TOT	.627	.393	.018	-0.187	0.95
			Listwise Deletion of Missing Cases (n=29)				
1	CP	CST:TIME	.439	.193	.193	-0.660	24.44**
2	HTE	G:TIME	.606	.368	.175	0.312	5.82
3	HT	TC:DIST	.700	.490	.122	-0.574	14.14**
4	CTE	10X:TIME	.785	.616	.126	0.330	6.37*
5	CTE	3X:DIST	.821	.674	.058	-0.231	2.78
6	TCD	D:TIME	.844	.713	.039	0.153	1.33
7	HT	TC:HITS	.855	.731	.018	-0.263	3.52
8	CTE	10X:DIST	.872	.761	.029	-0.244	2.88
9	CT	EASY:ERROR	.877	.769	.008	0.170	1.24
10	CT	EASY:TOT	.882	.778	.008	0.127	0.73

* $p \leq .05$
** $p \leq .01$

TABLE E-13. FORWARD STEPPED REGRESSION UNDER TWO STATISTICAL OPTIONS OF 1981 QUALIFICATION SCORE AT TC STATION (MRQ:TC) ON ARMY EXPERIENCE AND RESIDUALIZED MEASURES OF PERFORMANCE FOR SEVEN JOB SAMPLES

Step	Job Sample	Variable	Multiple R	R Square	R Square Change	Beta	F
		Pairwise Deletion of Missing Cases (Minimum n=22)					
1		RANK	.400	.160	.160	0.423	321.50**
		ARMY:TIME				-0.497	396.86**
		A1:TIME				0.014	0.21
		CP:TIME				0.427	192.95**
2	TCD	D:CORR	.669	.448	.288	-0.634	1151.77**
3	HTE	TOT:HITS	.875	.765	.317	-0.586	1028.00**
4	CP	CST:CORR	.950	.903	.138	0.395	451.14**
5	HT	TC:HITS	.998	.996	.093	-0.319	302.96**
		Listwise Deletion of Missing Cases (n=12)					
1		RANK	.475	.226	.226	0.816	154.18**
		ARMY:TIME				-0.085	774.59**
		A1:TIME				-0.031	0.445
		CP:TIME				0.750	144.21**
2	CP	ECD:CORR	.908	.824	.598	0.762	232.85**
3	CT	HARD:ERROR	.980	.959	.135	-0.576	59.06**
4	HTE	G:TIME	.993	.986	.027	-0.425	69.12**
5	CTE	10X:ERROR (AVG)	1.000	.998	.012	0.370	21.79*

* $p \leq .05$
** $p \leq .01$

TABLE E-14. FORWARD STEPPED REGRESSION UNDER TWO STATISTICAL OPTIONS OF 1981 ANNUAL QUALIFICATION SCORE AT TC STATION (MRQ:TC) ON MEASURES OF PERFORMANCE FOR SEVEN JOB SAMPLES

Step	Job Sample	Variable	Multiple R	R Square	R Square Change	Beta	F
			Pairwise Deletion of Missing Cases (Minimum n=22)				
1	TCD	D:CORR	.541	.293	.293	-0.670	207.01**
2	HTE	TOT:HITS	.769	.592	.299	-0.941	295.97**
3	CT	MOD:TOT	.813	.662	.070	-0.358	53.13**
4	HGL	GL:ERROR	.856	.733	.071	-0.503	85.37**
5	HT	TC:HITS	.939	.881	.148	-0.504	87.61**
6	CP	ECD:CORR	.984	.969	.088	0.310	41.71**
			Listwise Deletion of Missing Cases (*n*=12)				
1	CP	ECD:CORR	.554	.307	.307	-0.001	0.00
2	CTE	PROC:ERROR	.734	.538	.231	0.211	16.69**
3	HT	TC:DIST	.793	.629	.091	1.528	192.83**
4	CT	EASY:ERROR	.883	.780	.051	-1.181	181.26**
5	HT	G:DIST	.931	.866	.086	-0.903	57.00**
6	CTE	3X:ERROR (AVG)	.952	.907	.041	0.689	85.31**
7	HTD	D:TIME	.982	.964	.057	0.440	30.34**
8	CT	MOD:TOT	.998	.996	.032	-0.247	23.92**

*p ≤ .05
**p ≤ .01

TABLE E-15. FORWARD STEPPED REGRESSION UNDER TWO STATISTICAL OPTIONS OF 1981 ANNUAL QUALIFICATION SCORE AT GUNNER'S STATION (MRQ:G) ON ARMY EXPERIENCE AND RESIDUALIZED MEASURES OF PERFORMANCE FOR SEVEN JOB SAMPLES

Step	Job Sample	Variable	Multiple R	R Square	R Square Change	Beta	F
			Pairwise Deletion of Missing Cases (Minimum n=19)				
1		RANK	.276	.076	.076	0.299	5.72
		ARMY:TIME				-0.210	2.75
		A1:TIME				0.366	5.61
		CP:TIME				-0.444	8.10*
2	CT	EASY:ERROR	.769	.592	.516	0.865	51.90**
3	HGL	GL:TIME	.894	.799	.207	0.451	19.50**
4	CT	HARD:ERROR	.952	.906	.107	-0.429	12.48*
			Listwise Deletion of Missing Cases (n=13)				
1		RANK	.606	.367	.367	-0.522	37.93**
		ARMY:TIME				0.656	42.65**
		A1:TIME				-0.055	0.47
		CP:TIME				0.228	10.36*
2	CT	EASY:ERROR	.923	.852	.485	1.541	579.08**
3	TCD	D:TIME	.965	.931	.079	0.564	217.57**
4	TCD	D:CORR	.977	.955	.024	-0.348	85.66**
5	HT	TC:DIST	.999	.997	.042	0.347	64.19**

* $p \leq .05$
** $p \leq .01$

TABLE E-16. FORWARD STEPPED REGRESSION UNDER TWO STATISTICAL OPTIONS OF 1981 ANNUAL QUALIFICATION SCORE AT GUNNER'S STATION (MRQ:G) ON MEASURES OF PERFORMANCE FOR SEVEN JOB SAMPLES

Step	Job Sample	Variable	Multiple R	R Square	R Square Change	Beta	F
			Pairwise Deletion of Missing Cases (Minimum n=19)				
1	CT	EASY:ERROR	.659	.434	.434	0.874	1272.82**
2	HGL	GL:TIME	.829	.687	.253	0.578	798.66**
3	TCD	D:TIME	.900	.810	.123	-0.437	472.92**
4	HT	TC:HITS	.969	.940	.130	0.294	207.78**
5	CT	HARD:ERROR	.998	.996	.056	-0.311	156.99**
			Listwise Deletion of Missing Cases (n=13)				
1	CT	EASY:ERROR	.911	.831	.831	1.094	747.16**
2	TCD	D:TIME	.953	.908	.077	0.477	202.01**
3	CTE	3X:ERROR (AVG)	.961	.924	.016	-0.210	43.66**
4	TCD	D:CORR	.978	.956	.032	-0.419	123.73**
5	CTE	10X:TIME	.984	.968	.012	0.305	63.53**
6	CTR	3X:TIME	.992	.985	.017	-0.259	43.26**
7	HTR	G:TIME	.995	.990	.005	0.213	26.93**
8	CTE	PROC:ERROR	.998	.996	.006	0.107	8.85
9	HT	G:DIST	.999	.999	.003	0.091	6.24

* $p \leq .05$
** $p \leq .01$